

Britain may join US on reusable satellites

by Robin McKie
Science Correspondent

The Science Research Council is contemplating British participation in the development of a revolutionary satellite system which could allow experiments to be interchanged in orbit. If given the go-ahead, the multi-reusable satellite (MRS) would be expected to form the backbone of United Kingdom space research for much of the 1980s and 1990s and would be operated in collaboration with the Americans.

At present scientists and engineers at SRC's Appleton laboratory are undertaking a critical study of the design limits and potential capability of the MRS, in co-ordination with a similar study being carried out by the National Aeronautics and Space Administration in the United States.

The new satellite would be housed in a modular spacecraft system now under construction in America and when developed would be launched by the Space Shuttle. Each MRS construction and launch would cost about £20 million and would provide a very large and varied payload of experiments—a factor which would please many British space scientists who are currently pressing for greatly increased carrying volumes on future space missions.

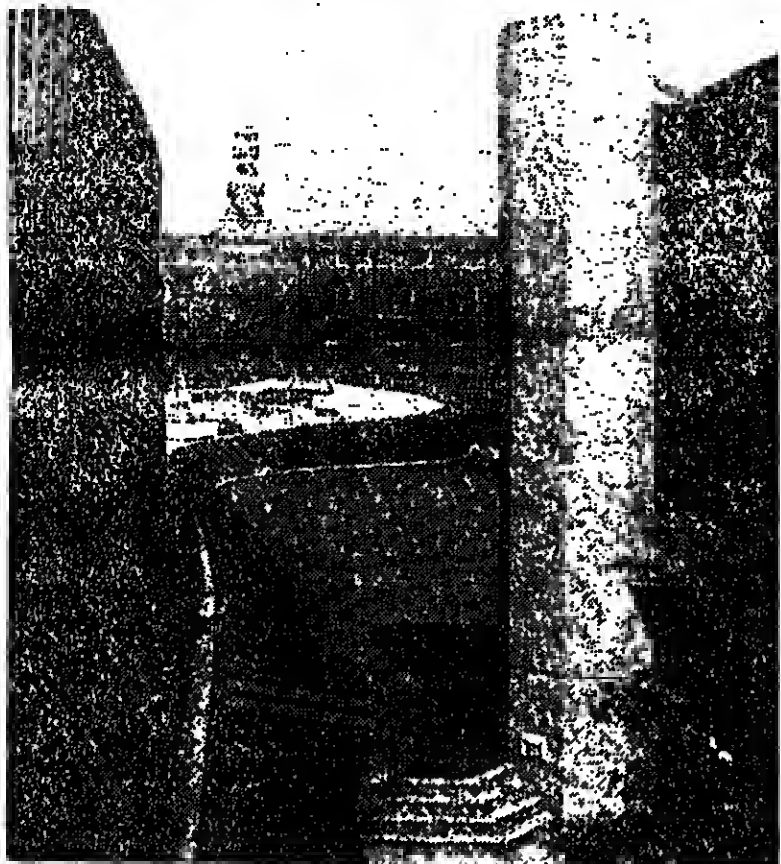
The Appleton team is considering two versions of the MRS. The first

would involve returning the satellite to Earth to replace experiments, the second would have this interchange taking place while still in orbit. This latter option is cheaper and more flexible, but, technically, would be extremely difficult to operate.

The satellite design would have two distinct parts. The first—based on the Americans' modular spacecraft—would be a triangular prism with 4ft square sides carrying the attitude control, power and data handling units. This would be attached to the experiment payload which would be aligned in boxes on the outside of the craft. The Space Shuttle, scheduled for launch in the early 1980s, has already been designed to carry instruments which would allow its crew to remove these boxes and replace them with other experiment packages while in orbit.

The group at Appleton is expected to report to the SRC at the end of the year, and if both American and British views are favourable, a full-scale feasibility study would then be started. If approval is then given, the first launch of an MRS vehicle would be expected in about 1985.

However, the MRS project is unlikely to succeed unless it is undertaken as a joint international venture. The Americans are known to be keen to have UK involvement to help get funding for the project.



The new Keble College building coils round its quadrangle.

RIBA awards go to Keble and Sainsbury Centre

The Sainsbury Centre for the Visual Arts at East Anglia University and the new building at Keble College, Oxford, are among the 30 winners of the 1978 Royal Institute of British Architects' Architecture Awards which this year attracted the highest number of entries in the scheme's 13 years' history.

Described by Mr Gordon Graham, RIBA's president, as one of the three most outstanding buildings created this century, the Sainsbury Centre is set in an ideal environment for the study of visual art, provided by the sophisticated modulation of space, light and atmosphere.

The architects, Foster Associates, inserted the building into the network of paths and services anticipated by Sir Denys Lasdun's original masterplan with an overhead bridge linking the existing pedestrian spine directly into the new complex. The centre combines two extensive exhibition galleries, a large reception conservatory, a

school of fine arts, a faculty club and a basement with storage and workshop facilities. Alandra Burton and Karolick's new building forms a modern addition to the mid-Victorian splendour of Keble College, which regarded as one of the most complete examples of William Butterfield's work. Utilising round the southern edge of the site to form a quadrangle, the new linear-shaped residential buildings occupy a small area within the existing college precincts. Its long frontage terminating at the north end near one of the most important public ends of the private Victorian houses.

The new building is housed in a serpentine buff brick wall, one room thick punctuated by vertical service towers with a glazed walkway. This leads not only to study bedrooms but links the block with a very loosely planned cluster of amenities including a bar and restaurant and with the communal facilities of Butterfield's building to the east.

BASW faces internal revolt

The British Association of Social Workers faces an internal revolt this week following its decision to call off a dispute with Aberdeen University over the appointment of an "unqualified" academic as professor of social work.

The association's house journal, Mr Brian McWilliam, Aberdeen branch secretary, expresses "alarm and dismay" at BASW's decision. Meanwhile the association came under criticism from other members of the profession for pursuing a parallel dispute with the London School of Economics, over the recent appointment of Professor Robert Pinker to a chair of social work studies.

Mrs Joan Williams, a lecturer in social work studies at the LSE, claimed that the majority of tutors and fieldwork supervisors at the school did not support BASW's call for a boycott. She said most LSE social work students had been given placements despite the ban.

Action pledge at Teesside

Urgent action has been promised to make whatever changes are needed to improve the management of Teesside Polytechnic, which has been criticised by the Council for National Academic Awards.

Meetings of the polytechnic governors, the academic board and Cleveland councillors have been called for mid-September to discuss the CNA report.

The polytechnic, which has been warned it may lose CNA approval for six degree courses if changes are not made, is careful not to admit any of the criticism until the meetings take place.

But a joint statement by the chairman of Cleveland education committee, Mrs L. M. Thompson, and the acting chairman of the academic board, Mr Colin Over, gives a determination to make sure the threat is not fulfilled.

The statement reads: "From our initial reading of the report we believe the local education authority, governors, and academic board will wish to ensure appropriate action in relation to those matters on which the report is critical."

Recognition for doomed certificate

More than a dozen professional associations have agreed to accept normal entrance requirements to accommodate holders of the Certificate in Education. It is the first time that the qualification has been phased out.

The changes were prompted by letters from Mr Gilbert Scott, careers officer at Newcastle Technical, to a number of associations and institutes. The polytechnic has been encouraging students to take the certificate in consideration of the shortage of postgraduate training for teachers, but the greatest employment problems in recent years.

Against his expectations, Mr Scott received favourable replies from a number of bodies, including the accountancy institutes, the Law Society, the Museum Association and the Institutes of Management, which have agreed to accept the certificate in their recruitment procedures.

Those bodies which have accepted the certificate have agreed to accept the possession of the certificate as a condition of membership, and the Institutes of Management, who joined courses at strength of O level passes in all those subjects to the certificate, agreed that three years' more than compensated for lack of earlier qualifications.

Although the changes will guarantee any more jobs for graduates trained teachers, Mr Scott felt it was significant that they were able to see opportunities in other careers. Some associations have considered the certificate, while others have not, but it is a step forward.

The polytechnic is to report short course run for the first time, designed to help students to gain a certificate in a further career. The majority of those who attended the year course are now in jobs using teaching and next year the group will be expected to give advice to any with local employers.

Scots may force change in grading

continued from front page

This means that a student's grades will be decided well before his results are available and may therefore be based on work done in the second year.

The National Union of Students met the Convention of Scottish Universities last month to press for the abolition of the system. The union's complaints will be put to the October meeting and both sides agreed that any national system should be universally applied.

Councillor George Foulkes, education convener of COSLA, suggested that some students could have different results from the normal mark because of the variable into four broad bands for national classification.

NEXT WEEK

The prospects for a breakaway students' union in Scotland. David Walker on libraries at the American president.

The relevance of university education and research by Sir Alan Cottrell.

The New Left Review revisited. French University Education. W. H. Newton-Smith on the papers of Imre Lakatos.

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£300m a year warning on longer degrees

from Clive Cookson

It would cost about £260m a year in current expenditure and another £10m in capital investment to extend British undergraduate courses from three years to four, a senior official warned this week.

Mr Ralph Toomey, undersecretary for further and higher education at the Department of Education and Science, released these figures at the Commonwealth Universities Congress in Vancouver. He emphasised that they were provisional but they were clearly intended to check the growing talk in universities about the need to move to four year courses, particularly if the GCE A level examination is replaced by less advanced N and F levels.

He acknowledged that pressure for longer honours degree courses to maintain academic standards would inevitably follow the introduction of N and F levels, and some of the British vice-chancellors and professors in his audience indicated that pressure was already building up in their institutions.

"I am sure there would be strong resistance from central government to any appreciable extension of the length of the first degree course because of the vast additional expenditure," Mr Toomey said.

If all new students moved into four year courses from 1981-82, universities in England

and Wales would require an additional £40m a year recurrent grant and £20m equipment grant (at today's prices) by 1984-85, he estimated. Capital expenditure of £570m on new university buildings would be needed, spread over four or five years.

If polytechnics and other institutions of higher education also moved to four year degrees they would have to spend an additional £120m a year on recurrent grants and £400m on new buildings. Student grants in the public sector would increase by £40m a year.

The Government had "significantly" omitted to mention the possibility of extending undergraduate courses as a way to mitigate the effects of declining enrolments after 1983 in the discussion document "Higher education into the 1990s".

"This seems to indicate that for the foreseeable future the three-year first degree course is expected to remain the normal pattern in universities, in England and Wales at any rate, for full-time students, and that an accommodation must be made between this universities' entrance requirements and admissions policy, and the pattern of the curriculum and examinations in the sixth form," he said.

Dr R. F. Whelan, vice-chancellor of Liverpool University, spoke to the Commonwealth university leaders on "standards of university administration and their effects on secondary education".

Middle class make Cambridge even more their own

by Lisa Wood

Cambridge University is becoming more middle class, according to figures published this month.

The number of male students applying whose parents have manual and agricultural occupations has fallen to 13 per cent of the total number of applications for 1978, compared with 15 per cent in 1974.

The Cambridge University Reporter, which gives a 40-page breakdown of student numbers, shows that the number of children applying from "other non-manual" backgrounds has also fallen from 23 per cent of the total in 1974 to 21 per cent in 1978.

The number of applications from children whose parents are in professional and technical occupations has risen most significantly in the past four years. In 1974 43 per cent of students applying came from this class, rising in 1978 to 46 per cent.

Of the male students accepted in 1978, 21 per cent came from homes where parents were administrators and managers, 49 per cent from professional and technical backgrounds, 39 per cent from non-manual backgrounds and 32 per cent whose parents had manual or agricultural occupations.

The socio-economic backgrounds of the 718 women students accepted this year follow a similar pattern but with a smaller percentage coming from non-manual and manual and agricultural backgrounds (17 per cent and 9 per cent respectively) and slightly more (52 per cent) than male students having parents with

professional and technical occupations.

More than 48 per cent of all undergraduate students accepted for 1978/79 came from London and South East England. Wales and the North had the lowest percentage of applicants but the ratio of applications to admissions for these regions was consistent with that of other areas.

The percentage gaining entry from maintained schools is increasing. In 1978 it was 44 per cent of the total while in the years 1973-77 it averaged 41 per cent.

The number of women going up to Cambridge is continuing to rise slowly. In 1968 they made up 11.7 per cent of undergraduates and postgraduates rising in 1977-78 to 22.1 per cent, the increase being fairly similar in both undergraduate and postgraduate study.

More women applied from maintained schools than from direct grant and independent. In 1978 51 per cent of female applicants were from maintained schools, 15 per cent direct grant and 20 per cent independent. In 1973-74, 51 per cent came from maintained schools, 17 per cent direct grant and 20 per cent independent. The number of applications from women has risen from 1968 in 1973-74 to 2,381 in 1978 with 547 and 760 acceptances respectively.

Of the total of 959 undergraduate and postgraduate students from overseas in 1977-78 the greatest percentage came from the United States, with 98 undergraduates and 133 postgraduates.

Cambridge University Reporter: Special No. 16 Vol. CVIII. Price 15p.



Kings of Cambridge

AUT seeks to end short contracts

by David Jobbins

The Association of University Teachers has called for an end to the practice where university research workers are employed on short-term contracts for 15 to 20 years as a series of one-year renewable contracts.

The AUT suggests in a discussion document sent to local associations that after six years research workers on short-term appointments should be transferred to the permanent staff.

In a letter to secretaries of the local associations, deputy general secretary Mr John Akker attacked the practice as "most damaging to the interests of the individual and the university".

one for existing research staff and the other for new appointments. It argues that six years is long enough for a university to find out if a research worker has potential, and that inefficient researchers would be a serious waste of money beyond this period.

It wants all research workers who have served in that capacity for more than six years transferred to permanent positions on the appropriate scales.

A similar six-year period is put forward for future research staff. It is proposed that no academic should work as a full-time researcher for more than six years. The AUT favours one three-year appointment followed by a further renewal for three years, or two

successive three-year periods on different projects as components of the six-year period. After six years all researchers on University Grants Committee funds who are chosen to remain with the university must transfer to a lectureship.

It accepts that the usual conditions of probation and the "efficiency bar" would apply. Conditions of service and promotion prospects normally operating in the research funding the researchers' work would apply equally. Where they did not exist, they would have to be negotiated.

Observations on the proposals at local level are being sought so that a report can be made before the association's December council meeting.

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Discrimination outlives the Sex Act, report says

by Maggie Richards

Sex discrimination still prevails in all parts of the education system almost three years after the Sex Discrimination Act, according to an analysis just published.

But discrimination now occurs mainly in the form of unconscious assumptions, rather than as deliberate action, says the report from Ms Gaby Weiner, a researcher at the National Foundation for Educational Research.

At an early age girls are still being directed away from certain subjects particularly in science, and this is reflected in the numbers of women going on to higher education—only one in four university students is a woman.

Education will soon disappear, the report concludes. "If change is to occur, it will be through the actions of teachers and others under the umbrella which the Sex Discrimination Act provides."

Ms Weiner says research has shown that attitudes at primary school level have formed the basis for sex preferences and self-image at higher education levels. Schools often use sex categories purely for ease of organization: for registration, quizzes and games, and seating purposes.

At secondary level separation of provision for the sexes is still based on traditional role assumptions. In upper forms the tendency to divide subjects becomes more marked, justified by some schools on the grounds of timetable necessity.

Evidence also reveals that more subject opportunities are available to girls in single-sex schools than in co-educational establishments—the proportion of girls taking science in single sex schools is 25 per cent more than in mixed schools.

"It would seem that the traditional assumptions on sex differentiation have a far stronger influence in mixed schools, where interests of the girls are often subordinated or

Oakes 'would destroy public sector'

by Peter Davlin

The Oakes' recommendations for polytechnic and college finance would destroy the nature of public sector higher education and create a profound split between further and higher education, a report published this week claims.

The Centre for Institutional Studies, headed by Mr Tyrrell Burgess at North East London Polytechnic, says in the report that the Oakes' committee suggestion for a national body to finance polytechnics and colleges should be abandoned, together with the existing regional advisory councils and the local government "pool" from which higher education costs are met.

"We believe it is for individual local authorities, in consultation with others, to decide how to collaborate in order that each local authority can fulfil its duty. Some may decide on simple recruitment arrangements. Others may form joint education committees," the report argues.

"The alternative proposed by the Oakes committee, for a new national body and re-established regional advisory councils, will mainly undermine public control by removing the accountability of individual local authorities for decisions about their institutions."

If a national body is to be set up, the authors say, it should not be responsible for distributing resources, but become an advisory body to the Secretary of State, endorsing the universities as well as the public sector.

Commenting on the assumptions underlying the Oakes recommendations, the centre says that some of them—such as the assumption that there are unlikely to be regional assemblies in England, and that there will be no big changes in local government finance—undermine the entire report.

"The working group has in this respect seriously misrepresented its terms of reference. If the group were subject to the controls of local government they would no doubt be acting ultra vires and personally surchargeable for the £34,000 they have evidently mispent."

Some of the Oakes recommendations are "even somewhat sinister", the centre says. One example is the representation of universities on the proposed regional councils, which would be subject to their decisions.

"It will thus be possible for universities to represent themselves as being competing with established universities."

The functions of the Secretary of State would be undermined by the sort of national body outlined by Mr Oakes, the centre adds. "It is always possible for the Secretary of State to deny accountability on grounds that the decisions are being taken by the protected and insulated body."

The Oakes report has led to a future management of the polytechnic system. An official response by the polytechnic association degree-level policy has been based on national rather than local factors, and regional advisory councils should lose their responsibility for approving such courses.

Better teaching ratios in social work urged

by Peter Davlin

Social work lecturers work harder than their colleagues in other subjects and deserve more generous staffing levels, claims a survey published this week by the Council for Education and Training in Social Work.

The survey shows that most social work lecturers spend some 30 hours a week on special administrative chores related to social work training, in addition to their normal teaching and research load.

Among the administrative chores are the organization of field placements for their students, liaison with social work agencies providing placements, managing with placement teachers who work outside the academic institution, course planning and the selection of students.

"At the same time the social work teacher is denied the advantage enjoyed by most colleagues of working weeks largely limited to academic terms," says the survey.

"The average social work course fitted into an intensive two years or even more intensive one year continues substantially beyond the end of academic terms in most cases."

The council's claims are based on a questionnaire sent last year to all institutions teaching the Certificate of Qualification in Social Work. They included 40 universities and university colleges, 25 polytechnics, six Scottish sector institutions and 18 other colleges, with a total of 6,500 social work students are taught by some 600 lecturers.



Mr Gison Mannings, from Jakarta, the 200,00th overseas student to be greeted by the British Council courier service with an F. Fox of the Arrivals Section outside the Council's headquarters in Spring Gardens, London.

Nuclear site offered to Europe

by Robin McKie Science Correspondent

The Science Research Council has made an informal offer to let its Daresbury centre be used as a site for a new international nuclear machine.

At present, an ESP working party is considering creating a European synchrotron radiation source which would produce intense beams of ultra-violet and X-ray radiation for a variety of research purposes. This would either be run by the foundation or a new European nuclear body, which would be created especially to organize its operation.

Professor Geoffrey Allen, chairman of the SRC, has recently offered the Daresbury site to the ESP as a home for the synchrotron source. Its construction would either be financed jointly by European countries or it would be built by Britain in exchange for the use of other European nuclear or laser machines.

The ESP working party has formed two sub-committees—one to look at the machine design limits and the other to examine possible experimental instrumentation. These groups are expected to make their reports next summer and a decision to go ahead with the synchrotron project will be taken shortly after that.

The SRC's own synchrotron device at Daresbury is now nearing completion and its operation time is already heavily subscribed. In scientific circles there is a strong interest in investigating chemical, biological and crystalline structures. A new European machine there would help alleviate this problem and would also provide a far more advanced technology tool to take advantage of techniques yet to be developed.

It is believed that other groups of scientists, who have not yet shown much interest in the potential of synchrotron radiation, will join other researchers in using the device, which produces intense beams of photons over a wide range of wavelengths. A decision to build a European machine could involve future collaborative trends which would avoid unnecessary duplication in the provision of major research centres.

Institutes call for broader training for engineers

Broader education must be introduced for engineers to include not only mathematics, physics and chemistry but also subjects such as biology and physiology. In its evidence to the Pilkington committee which is looking into Britain's manufacturing industry, the Council of Science and Technology Institutes states that this should be carried out by extending university courses to four years.

"Short-term financial considerations should not be allowed to prejudice this highly desirable educational development," the council adds.

On the question of registration, the process for setting the standards of qualification and rules of conduct for engineers, the council makes no strong recommendation. However, the group does state that it is concerned that registration could discriminate against scientists who happen not to be chartered engineers but who are still fully competent.

"If such cases are not taken into account in the drafting of a scheme of registration we believe there is a danger of injustice to individuals, a loss of valuable personnel to industry and possible damage to the national economy," it adds.

The council also calls for improved salaries and working conditions for engineers working in industry, to bring them in line with those employed by the Government for universities.

Furthermore, the prospects for promotion to the highest level in scientific careers compare unfavourably with those in other advanced countries.

In a supplementary submission to the evidence it gave to the Pilkington committee in November, the Institution of Mechanical Engineers warns that United Kingdom industry needs engineers who not only understand the engineering aspects of their company but are also able to motivate colleagues and work with their leadership qualities.

"We propose to include a study of the methods of leadership training used by companies with a reputation for success in personnel development and by the Services," says the institution.

More psychiatric facilities needed at universities

The need for more psychiatric facilities in higher education institutions and the improved training of student counsellors has been recommended by Dr John Payne, director and psychiatric adviser of the London School of Economic's Students Health Service.

Dr Payne, a contributor to *Students in Need* a book published this month, writes that studies have shown that between 2 and 10 per cent of students in Britain suffer severe psychiatric disorders and that between 10 and 20 per cent have minor or moderate disorders.

Universities, polytechnics and colleges, in a time of financial stringency, are tried to meet this need by setting up improved counselling services but this development has not been paralleled by more psychiatric facilities. Only three or four British universities or colleges have full-time psychiatrists and most of the remainder employ psychiatrists only on a sessional basis to provide a consultant service. This is unlike institutions in America where most colleges of a reasonable size employ a full time psychiatrist.

Dr Payne says more full-time psychiatrists should be employed in student health institutions. These could act in a "consultant" capacity as well as supervising the more difficult cases of the counsellors.

The difference between counselling and psychotherapy is not clearly defined, says Dr Payne, but he sees psychotherapy as appropriate when dealing with the more disturbed cases.

Dr Payne says about counsellors: "The growth in counselling is not matched by the sufficient training of enough counsellors, and all counsellors are not in agreement about their theoretical stance or how they should be working. Diversity in background and training may provide variety and flexibility as long as that training is sufficiently focused and rigorous: the anxiety is that in some instances it is not and that counsellors with insufficient training and experience of working are being appointed."

Dr Payne says that before the 1950s academic failure was generally seen as a result of insufficient intelligence to obtain a university degree. Lack of the necessary mental fibre required to sustain three-year courses or insufficient motivation to study a particular subject.

But Dr Nicolas Muleson, in whom the book is dedicated, recognized in the 1950s that there was a correlation between wastage, failure and psychiatric morbidity. He was among the first to identify examinations as being the cause of sufficient stress to diminish performance and impair examination results.

Later studies have suggested that moderate neuroticism and hyperactivity relate positively to success but also to the likelihood of seeking help for psychological difficulty. Dr Payne says that the background to the problems of performance and their relation to psychological difficulty is complex but "one thing seems certain, that both academic failure and psychological difficulty are related to the failure to master successfully the developmental tasks of adolescence and notably the failure to achieve independence from parents and acquire a satisfactory personal identity which is not too influenced by parental attitudes and expectations."

During the last five years Dr Payne says there has been an increasing demand from the administrative and lecturing staff, and more frequently from the students, for the appointment of more counsellors. He says: "This is an important part of education where psychiatry complements and supports academic teaching. . . . While it is acknowledged that some people can themselves focus on academic tasks because of their emotional and personal reactions, it is preferable that academic brilliance (or even competence) is not nurtured in emotional cripples."

Dr Payne also says the place of psychiatric and counselling services in higher education is one of 17 on students in need published in memory of Dr N. Muleson, physician-in-charge of the student health service at London University until his death in 1976.

Students in Need: Essays in Memory of Nicholas Muleson (Society for Research into Higher Education) Ltd, Surrey University, £5.50, plus 20p postage.



Bath University cameramen making a film about the Claverton pump which has been restored to full working order. The pump, which was built in 1813 for the Kennet and Avon canal, has been restored by Bath engineering students. The film is second in a series being made for Dr Angus Buchanan.

Union call for involvement

A call for greater involvement of serving teachers in decision-making about teacher-training was made this week by the National Association of Schoolmasters/Union of Women Teachers.

The NAS/UNT has said that serving teachers should constitute one half of any committee which makes decisions about practical elements of initial training, about who should be awarded the status of qualified teacher, induction into teaching and in-service training.

The union sees this as an appropriate pattern for local, regional and national committees. Another main plank of the union's policy is that representation of serving teachers on such committees should be through the nominees of the major regional teacher unions.

The NAS/UNT also would like to see serving teachers make up one third of committees dealing with the academic education of student teachers.

Mr Fred Smithies, assistant general secretary (education) of the association, said the NAS/UNT was dissatisfied with the continuing existence of an organization created by the dissolution of the Area Training Organizations three years ago.

Union finance, accountants oppose plans

Government plans for a new finance student unions are opposed by the professional body representing accountants and finance advisers throughout the public sector.

Instead the Chartered Institute of Public Finance and Accountancy says that union finance should be part of the recurring budget of the institutions concerned.

It also stresses the desirability of independently audited accounts from each union.

CIPFA, which has members among universities, finance officers and throughout the education field as well as elsewhere in the public sector, warned the DES plans would lead to confusion and dual decision-making.

The DES proposes a dual system for student union fees. At the moment fees are fixed by the individual institutions but the DES wants to give individual student unions the right to set their own fees with maximums and minimums set for different categories of student. Extra subventions would be negotiated locally according to need.

"CIPFA denounces this proposal as 'unnecessarily complicated'."

The DES system "would lead to confusion and difficult decision-making, particularly in the area of resource allocation," CIPFA says.

Touching on the difficult area of student union autonomy, it suggests that the DES should not prevent from managing their own affairs within guidelines, but that the union should consider the financial implications of the proposals. The union should also consider the financial implications of the proposals.

It feels it is "essential" to have union constitutions specifically provide for annual accounts audited by an independent qualified accountant.

"The continued receipt of income from public sources should be conditional upon this requirement."

Report wrong, teachers say

The Oakes report recommendations for new regional advisory councils to take over responsibility for higher education and teacher training were criticized this week by Britain's second biggest teachers' organization, the National Association of Schoolmasters and Union of Women Teachers.

The association says that the report is wrong to suggest placing both higher education and initial teacher training under single regional subcommittees. It also calls for more representation of schoolteachers on the membership of the new advisory councils.

"The NAS/UNT does not object to the proposition that schools and schoolteachers' organizations can expect nothing more than minority representation when it comes to making decisions of a general nature about higher education in the main," the association says.

"We do not adopt the same position when it comes to decisions about higher education which have direct relevance to the preparation of people who propose to join us as our colleagues in the schools."

The association says that teachers' organizations should account for at least one third of the members of the regional subcommittees.

National poly body could self-destruct

The constitution of the national body proposed by the Oakes report is such that a major disagreement between its members could cause its collapse, the Chartered Institute of Public Finance and Accountancy said this week.

In a statement welcoming the creation of a national body and the new financial arrangements proposed in the Oakes report, the institute says that the body must have a majority of non-teaching representatives.

Decisions about the level of finance for higher education must rest with those ultimately responsible and accountable for it, the institute says.

The institute says that the body must have a local authority making a decision-making process.

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ACADEMIC DEVELOPMENTS

Mens sana in corpore sano

by Peter David

School students with a flair for sport as well as study will be able to read for a BA degree in the subject at Cresswell and Aisler College. The Council for National Academic Awards has approved a BA degree in sports studies beginning this October.

The aim of the programme, says the college, is to provide "a sound, broad education which is of intrinsic value and general relevance to students who have both an aptitude for sport and a scientific background."

Students will combine a study of "sports science" with one science discipline chosen from biology, physical science or psychology. It is expected that students will develop an understanding of the various scientific variables involved in human motor performance as well as knowledge and skills pertinent to problems they may encounter in their personal, social and working lives.

The course will concentrate on

four themes: the variables influencing performance in sport; a science and its sports application in depth; scientific methods, statistics and computing; and wide practical experience in a number of sports.

The place of sport in an increasingly leisure society is also examined.

"Sports science" is studied in parallel with a science discipline, while students are also required to take part in a number of sporting activities, specialising in a single sport in their final year.

The college stipulates that as well as possessing the necessary academic qualifications applicants will have to provide evidence of sporting achievements, and undergo a test of motor ability before being admitted.

After graduating, the college says, students will have gained knowledge and skills relevant in such fields as sports equipment, sports services, social services and personnel and public relations.



Sport science may well study Osvaldo Ardiles left, and David Gower, two bright stars of 1978

Ethical problems of sex, drink and the family

Two new BA courses, one in social ethics and the other in English literature, are to start this October at St Martin's College of Higher Education, Limerick.

The course on social ethics, said by the college to be unique in this country, has been designed to "give students the opportunity of probing major social issues in a systematic way and of assessing them in the light of various ethical perspectives."

It will be taught by an interdisciplinary team of tutors and contacts have been established with local community agencies and related regional and national organizations.

Part one of the course will introduce moral philosophy and law and areas where ethical issues are raised—such as sexuality, use of alcohol and the family.

In part two there will be three strands: comparative ethics, case studies, and philosophical and psychological issues.

There will be close association between the social ethics course and the English literature course with the related minor subjects taken by students. Students who complete a BA degree may subsequently apply for the college's postgraduate certificate in education should they want a teaching qualification. Degrees will be awarded by the University of Limerick.

York to establish electronics department

York University is to set up a department of electronics which will develop close relations with industry and prepare students for careers in electronic engineering. Dr G. C. Bloodworth of Southampton University's department of electronics has been appointed to the new chair at the York department which will open next year.

What about the workers is psychology course interest

The first occupationally oriented psychology master's degree in receipt of approval from the Council for National Academic Awards is to start in October at North East London Polytechnic.

It will be a two-year part-time course designed to provide involvement in occupational work such as personnel, training and career officers. Students will be based at the faculty of human sciences in Stratford, and will be expected to attend two evenings a week.

A varied short course diet

Visiting to houses of historic interest, management training courses for mining engineers and training courses for career advisors are in the varied list of short courses being held by Keele University during September.

Torway National Trust members are to spend a week as part of their course examining National Trust properties, including stately homes in Derbyshire, while 80 newly qualified mining mechanical and electrical engineers on the staff of the National Coal Board are to extend a two week course in management.

Jewish studies for would-be teachers

Permission has been given by the Council for National Academic Awards for a new education degree course in Jewish Studies. The course, the first of its kind, will be taught at students who intend to teach in Jewish schools.

Leading to a BEd or a BEd (Hons), it is to be mounted jointly by the Jews' College and the Polytechnic of North London and will begin next month.

As their specialist subject, students will undertake a study of Jewish religious and ethical teaching, Jewish history and the Hebrew language. They will also be required to spend some time living in Israel during the holidays or before embarking on the course.

Mr Chris Lewis, head of the polytechnic's occupational psychology unit, said: "We are looking forward to running this course which will develop in students a fundamental understanding of behaviour in the work place rather than them being hitherto by the in the light of problems in this area which they are often expected to accept at face value. Students will be able to use the former library of the National Institute of Industrial Psychology, which is now at the polytechnic."

Later in the month Ball State University students from Indiana will arrive to participate in one week induction teacher training course which will include practice in local primary schools. Students of chiropody will take a course related to the pathology of medicine, a section of the Podiatric Association's syllabus for the certificate in podiatry. The course has a wide reputation and students are attending from all parts of the country to be taught mainly by consultants from the North Staffordshire, Pathology Laboratories.

In the interest of better management

Hatfield Polytechnic is to run a new postgraduate diploma in operational research. Approved by the CNA, it is designed to give people without qualifications in the field a new entry route into an activity which the polytechnic says has proved invaluable in improving management efficiency in many organizations.

All holders of the diploma will be able to transfer to the established MSc course in operational research, which is now to be available on a day-release basis. One more year's study followed by a project would enable holders of the diploma to complete the MSc.

How to deal with truants from school

by Lisa Wood

How to deal with truancy is one of the problems teachers will study in an in-service course at the faculty of education, University College, Cardiff, from this October.

The course, on behaviour problems and related learning difficulties, is intended to relate directly to secondary schools' needs rather than merely improve the professional competence of the teachers on it.

The students, jointly selected by their local teachers, individual local authorities and the University's education department, will be responsible for developing school based in-service training in the field of learning difficulties and behaviour problems such as truancy.

Over a period of three to four years one nominee from every secondary school in the three local authorities involved in the in-service training will have attended the course. The local authorities are South Glamorgan, Mid-Glamorgan and Gwent.

Thirty teachers have enrolled for the first year including five headmasters. The course will be part-time for two years and the educational format will have degree status. Students will attend the university for one half-day a week and one evening during the university term. An important element of the course will be a number of school-based studies which will look at the school as an institution, with its particular ethos, structure and enrichment area. This study will start in the student's own school and during the course it will incorporate study at two other schools.

The Welsh Office is making a link with this course with a four-year research project which will evaluate the course and record the extent and nature of the school-based in-service training in every school and the staff response to it.

A spokesman for the University College, Cardiff, said: "As far as is known this particular approach in an area of educational concern is being tried for the first time in South Wales."

High finance to be studied in Edinburgh

by Patricia Santinelli

Scotland's financial capital, Edinburgh, is to be the setting of a new MSc degree course in high level financial and banking studies at the University of Edinburgh, starting this October.

The one year course has been designed for those people already in or those seeking careers in high finance, such as investment analysis, those in the financial divisions of national and international corporations, as well as the stock exchange.

Its aims are to develop students' existing skills by advanced study in finance and banking, particularly at the international level. The programme consists of three core subjects: finance, banking and economics, with two "elective" topics: international financial studies, international analysis, international taxation and international accounting.

Admission will generally be open to graduates with first or second class honours degrees in accountancy, economics or business studies and/or those with acceptable professional qualifications.

The course is to be directed by Professor John R. Small, head of the department of accounting at finance at the university, and by George Hume, head of the department of banking and finance at the university, and is concurrently deputy managing director of the Royal Bank of Scotland and the National Commercial Bank Group, Ltd.

Professor Small said: "The establishment of this master's degree course reflects a further development of financial and banking studies which recognizes the continuing expansion of the world trade requires a wider knowledge and understanding of international finance in the professions, commerce and industry."

He said that Scotland had a long and well established international reputation in finance and banking. The university had built on this with its own involvement in international banking and research and the development of close links with the financial and banking community.

Energy MSc at Surrey

A new MSc course in energy engineering is to be launched at Surrey University this October. It is believed to be the first of its kind in Britain and is intended for day-release graduates.

The energy degree has been developed in close consultation with industry and it is expected that a number of companies will provide visiting lecturers for particular topics. And the course will also include a special project for each student and those on industrial day-release will carry this out within their company's own organization.

The introduction of the MSc will take advantage of the university's experience in the study of energy resources and their uses. The chemical engineering department has taken part in the development of improvements to the operations of cement kilns which have saved industry an estimated £1m a year and the economics department is heavily involved in the exploitation of North Sea oil.

The new course will join several other part-time MScs run by Surrey University.

Dual purpose housing start

The first CNA-approved house degree course in housing studies starts at Sheffield Polytechnic this month. The course is part of a new sandwich-degree programme in housing studies and urban economics.

The BA in housing studies is designed to help students develop their understanding of the society in which they live and work, and to equip them for jobs with government departments, local authorities, housing associations and voluntary bodies.

A second degree sharing resources of the BA is the BSc honours in urban land economics, which is designed for students seeking a career in estate management, and gives a broad foundation year for the professional practice surveying profession.

A broad foundation year is shared, giving students the chance to learn about both courses and to transfer from one to the other without loss of time.

Language in the classroom

Language development in the classroom is included in a new in-service course for teachers to be offered by the Open University next year.

Levels of language ability and the identification of specific language problems are two of the issues covered in the course, which will be presented for the first time in February, 1979.

It also covers dialect variations and the effects of language on learning performance in school, offering course participants the opportunity to find theoretical understanding in the process of language development in the classroom.

September is the first annual registration for the 1979 programme.

North American News

Court rules on bargaining

from Clive Cookson

WASHINGTON Academics who play a major role in running a university are managerial personnel rather than employees, and have no right to engage in collective bargaining, a United States appeals court has ruled.

The decision has sent tremors of apprehension through the three organizations vying to unionize the nation's faculty members—the American Association of University Professors, American Federation of Teachers, and National Education Association.

It may be taken to the Supreme Court, and if it is upheld there, private universities will be obliged to negotiate with faculty unions that academics elect to represent them.

The case involves Yeshiva University in New York, a Jewish institution with 210 full-time and 150 part-time faculty members. In December, 1976, the Yeshiva University Faculty Association, an independent union affiliated to none of the three national organizations, won a campus election for the right to represent them, and the National Labour Relations Board certified the exclusive bargaining agent.

However, the university refused to recognize or bargain with the faculty association, although the NLRB ordered it to. The board asked the Court of Appeals for the Second Circuit to enforce its order. The three judges who heard the case decided unanimously against the board and the faculty association, on the grounds that faculty members have substantial authority

over Yeshiva's employment practices, curriculum, admissions, academic standards and tuition fees. Therefore, the judges ruled, they effectively control the operation of the university and must be considered as "managerial personnel" under the National Labour Relations Act. The Act lays down labour laws for the nation's private colleges and universities but not for state institutions, which are subject to state law.

Employers cannot be forced to negotiate with representatives of managerial personnel, though they may, of course, do so if they want to. They are obliged to bargain with unions elected by a majority of "employees".

The appeals court said, in a 42-page opinion written by Judge William Mulligan, that "given the great diversity in governance, structure and delegation of power at (private) universities" it had looked solely at the procedures of Yeshiva. But, the court noted, "many such institutions have apparently adopted a collegial decision-making process in which the faculty plays a decisive role in the development of institutional policy".

In fact, most "narrow" private universities have systems of governance that are broadly similar to Yeshiva's, and the decision would be applicable to them too. If the NLRB does appeal to the Supreme Court, the board is expected to make that decision next month. The eventual outcome could affect labour relations in public higher education, because states are influenced by the decisions of the NLRB and the federal courts.

Congress approves tax credits

The controversial Tax Credit Bill has now passed successfully through the House of Congress. The House version, approved last week by 65 votes to 27, would allow parents to claim 50 per cent of tuition and fees for each child enrolled in college, up to a maximum of \$250 per student for 1978/79 and \$300 for 1979/80, and \$500 from 1980/81.

The Senate voted 56-41 to eliminate credits for elementary and secondary schools from the bill. These were included in the version passed by the House of Representatives earlier in the summer.

On the other hand, the higher education credits in the House Bill are less generous: the maximum would be \$100 in 1978/79 and \$250 from 1980/81. Differences between the two versions will have to be resolved by a Senate-House conference committee before the bill is sent on to President Carter.

Mr Carter and his administration have vigorously opposed tuition tax credits, whether at the elementary or secondary or the college level, on the grounds that they would give an unjustified break to wealthy Americans who can pay school and college bills with no trouble.

The President has threatened to veto the legislation, and there is considerable doubt whether his supporters in Congress could muster the two-thirds majority needed to override a presidential veto.

President Carter has proposed a more equitable means of helping needy families with college bills, by extending the government's existing student grant and loan programmes to cover them. The Senate passed a version of Mr Carter's plan, by 68 votes to 28, the day after the House has not yet returned to considering the President's proposals.

However, as not only Mr Carter but also many congressmen have said, the country cannot afford both. The Senate's tuition tax credit bill would cost the government \$1.7 billion a year and its extension of \$1.5 billion.

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Jesuits send back \$50,000 gift from Arabs

Georgetown University has just returned an apparently unrestricted \$50,000 gift from the Government of Iraq.

Although the embarrassed university administration refuses to discuss the circumstances of the rejection, it is a good illustration of the animosity with which American universities regard donations from the Islamic Middle East.

Georgetown, a Jesuit university in Washington DC has, until now, been one of the highest beneficiaries of Arab gifts.

Last year its School of Foreign Service accepted \$750,000 from Libya for its Centre for Contemporary Arab Studies. Since Libya's General Gaddafi is, in the eyes of many Americans, about the most unpopular of all foreign leaders, the donation caused quite a furor in the university.

Other Arab countries that have given \$50,000 or more to Georgetown include Jordan, Saudi Arabia, United Arab Emirates, Oman, Egypt and Qatar.

Many Americans, especially Jews, have expressed doubts about the motivation behind these contributions. They refuse to believe that the donors are purely altruistic and suspect they want to buy political influence in an academic centre located conveniently in the nation's capital.

The decision not to accept the latest offering from Iraq was made at the highest level of the university.

The AAUP and AFT filed briefs supporting the Yeshiva University Faculty Association, requesting the implications of the case for the faculty unions that are affiliated to them and they would join the NLRB in appealing to the Supreme Court.

So far, only about 80 of the 1,600 private colleges and universities in the United States have voted for faculty unionization—none of the most prestigious research universities are unionized.

The collective bargaining movement has been more successful in the public sector, with nearly 800 state institutions organized by the three national organizations (independent bargaining units like the Yeshiva Association are very rare).

The Yeshiva case is the third involving faculty unionization to reach a federal appeals court. The other two went in favour of the unions. In one the United States Court of Appeals of the First Circuit upheld a NLRB ruling that academics at Wentworth College of Technology, Massachusetts, had the right to unionize; it found that faculty members there had no significant impact on policy or management.

Earlier this year the same court enforced a NLRB order for Boston University to start bargaining with the local AAUP chapter. Here the issue was the composition of the bargaining unit—should departmental chairmen, paraprofessionals, members of the law and medical faculties be included? And whether academics as a whole have bargaining rights. Boston University has appealed to the Supreme Court.

The Senate has not yet decided its spending level for the NSF, but if it follows the recommendation of a key committee it too will vote for a cut this time—though a much smaller one than the House. Whatever happens, the foundation, and the academics whose work depends on its grants, will get less money to spend on research next year than President Carter planned.

Beyond 1979 the outlook for the science budget is looking increasingly murky. For a start there is the growing fiscal crisis in Congress and within the Carter administration.

In June, Bowman Carter, a senior member of President Carter's Office of Management and Budget, warned in a meeting on federal research policy, sponsored by the American Association for the Advancement of Science, that the 1980 Budget will be the lightest for a decade, with cuts across the board in Government programmes.

James McIntyre, director of the OMB, has now followed up by asking Congress to cut \$5 billion from the 1979 Federal Budget—had he not specify where—and repeating the need for a "pause in Federal spending" in 1980.

At the same time Mr McIntyre and Frank Press, the President's science adviser, sent all agency and departmental heads in the administration a memorandum reminding them of Mr Carter's commitment to basic research.

"Because of the President's policy to reduce the Budget deficit, the overall agency planning ceilings developed for fiscal years 1980-82 are stringent. Despite these light constraints we believe that it is important to re-emphasize the ad-

ministrations concern for the funding of basic research", the memo said.

Mr Carter has written to members of Congress, appealing to them not to cut research programmes: "I want to emphasize that even relatively small reductions to key agencies such as the National Science Foundation, or in new initiatives and growth planned for the mission agencies, including NASA and the departments of agriculture, energy and defence, would defeat our objectives", he said.

"Modest increments of real growth in these programmes are necessary if we are to strengthen the nation's capacity and productivity in critical areas of research."

Unfortunately, not only is on anti-spend mood developing in Congress (and the country) but the NSF seems to be picking up an increasing number of influential critics.

Senator William Proxmire is well known for his "Golden Fleece of the month" award that ridicules absurd research projects. More and more of his colleagues have recently been expressing similar sentiments.

For example, Senator Orrin Hatch, a Republican from Utah, told the Senate recently: "While I realise there is disagreement regarding the scientific significance of studies such as ecological interactions between flamingos and lakes in the Andean altiplano" for \$16,500 in the presidential budget. In March 1978 for \$22,300, I think the beleaguered American taxpayer would prefer another use for these funds."

Other Congressmen are challenging the NSF's contention that the costs of basic research have been rising even faster than the rate of inflation. They point to the fact that, according to surveys by the American Association of University Professors and the National Institute of Education, academic salaries, which account for half of all NSF grants, have been going up more slowly than consumer prices over the past five years.

Carter tries to stop cuts in science spending

from our correspondent

WASHINGTON When President Carter announced his 1979 Budget plans last January, he overruled his proposals for a big increase in Federal spending on scientific research, which had fallen far too low in the early 1970s.

Seven months later, with the Budget more than half way through the maze of Congressional committees and subcommittees, it is looking extremely unlikely that basic science will receive the increase of 5 per cent on top of inflation requested by Mr Carter (71158, January 27).

For the mood of Congress this summer turned against more government expenditure—at least partly in response to the passage of the Proposition 13 tax-cutting referendum in California.

And academic science does not have the same powerful lobby groups to protect it from cuts as other fields like defence and agriculture.

The House of Representatives has already approved a huge \$44 million cut in the administration's budget request of \$934 million for the National Science Foundation—the major source of Federal funds for university scientists. After inflation, this would leave the NSF with three or four per cent less to spend in 1979 than in the current fiscal year.

Traditionally, the House does vote to reduce the administration's NSF Budget request, though not usually as drastically as that. Then the Senate normally proposes an increase and a compromise is reached near the administration's request.

The Senate has not yet decided its spending level for the NSF, but if it follows the recommendation of a key committee it too will vote for a cut this time—though a much smaller one than the House. Whatever happens, the foundation, and the academics whose work depends on its grants, will get less money to spend on research next year than President Carter planned.

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James McIntyre: 'pause needed'.

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Professor Dorothy Hodgkin, who retires next month after a year as British Association president.

The president speaks for the last time

When Professor Dorothy Hodgkin delivers her presidential address to the British Association annual meeting next month, her speech will mark the zenith of a close involvement with the association that has stretched over many decades.

Such is her dedication to the BA that she even interrupted her honeymoon in 1937 to deliver a paper to the annual meeting in Nottingham. It was a quaint illustration of things to come, for Professor Hodgkin has since become a familiar figure at these meetings, frequently attending with her three children.

It is a measure of her achievements that she has succeeded in combining a domestic role with a scientific career that has been showered with honours. In 1961 she was awarded the Nobel Prize for chemistry for her work on the X-ray crystallographic analysis of the structure of molecules—the only woman after Marie Curie and her daughter Irene to win the chemistry prize. Professor Hodgkin is also the first woman since Florence Nightingale to receive the Order of Merit. She is presently Chancellor of Bristol University and a Fellow of Somerville College, Oxford.

All this has been achieved despite her unimpaired vision and the role of women that existed in the scientific hierarchy. "There is still prejudice against women in some circles, but not in so many now," said Professor Hodgkin, "and the fact that there are so very few women scientists in senior posts seems to me to be mainly due to history and a necessary slowness in changing our way of thinking and living."

However, there are moves which could be taken to rectify the bias against women scientists, she believes. "Having children takes considerable time off from scientific work and young women with families may have to work shorter hours, and make, for a time, slower progress than young men in the same group. There should be practical arrangements for dealing with this problem—for example, part-time jobs that can turn later into full-time jobs," she added.

This problem, which affects scientific endeavour in Britain, is likely to figure prominently in Professor Hodgkin's presidential address to the BA conference on September 4. Indeed the whole problem of waste of human resources is one which she feels is much to blame for poor research performance in Britain.

As she points out, when one considers the numbers of scientists per 10,000 population, there are 35 in Russia, 25 in the United States, 23 in Japan, 19 in West Germany, 11 in France but only about 10 in Britain.

There are surely many more in this country who could do scientific work if they were positively encouraged to do so and would find such work enjoyable. Wartime experience showed that many un-

expected people could do skilled scientific work if suitably trained and selected. We need to draw in more of the young and also more women."

Another bone of contention is the amount of government research and development spending which is directed towards defence.

In Britain, this sum represents nearly 43 per cent of the total R and D finance, and reaches nearly 50 per cent in the United States. "I am glad to see such proportions are now falling but they are still far above the expenditure of West Germany, at about 17 per cent, and Japan, at about 3 per cent."

World expenditure on military research and development was estimated at about \$30 billion last year—an enormous sum representing an enormous investment of scientific manpower that could and should be directed in other ways.

These and other controversial issues should become focal points for debate by the BA, she believes. A classic example of this was provided in the nineteenth century when an association meeting became the scene for the now famous confrontation between the representatives of the church and science in which Huxley successfully championed Darwin's theory of the evolution of man. While not expecting classic duels of this kind, Professor Hodgkin believes there is need for careful debate on a number of scientific issues that have vital social importance—such as pollution, atomic energy and microprocessors. The last topic has already formed the basis of a recent BA meeting which Professor Hodgkin attended.

As a scientist primarily concerned with the discovery of the structure of complex compounds, she has witnessed and experienced growth in our knowledge of these areas.

This was reflected in a recent article in *Nature* on the construction of bacteria which produces penicillin. "The whole operation is an extraordinarily intricate achievement that could not have been conceived when I first began research 45 years ago."

In her work to unravel the complex structure of compounds, Professor Hodgkin and her team became adept at the flourishing science of X-ray crystallography. It was a process that led her to appreciate the extent to which pure and applied science are interconnected. "Pure scientific research often has to wait for developments in technology needed to investigate a process. To turn these technical developments into a wait for a theoretical breakthrough."

It is the appreciation of the fortunate nature of scientific research and its support which will probably feature in her presidential address. It will doubtless be a fitting prelude to a long and distinguished scientific career.

Robin McKie
Science Correspondent

Scottish student clans split over union allegiances

Adorning the walls of the National Union of Students' offices in Edinburgh is a picture of an elderly man who, legend has it, entered a competition to find the dim and distant past to find the breakaway Scottish union, and has been searching ever since. While the joke may be less than sensitive to criticisms of the national union north of the border, it does have the ring of truth where the perennial question of devolution is concerned to student circles.

Ever since NUS decided to move into Scotland in 1971, bringing about the demise of the previous Scottish Union of Students, there has been speculation about the formation of a new independent movement. Expansion northwards has certainly not been without its problems, three of the largest institutions having decided to join Glasgow University outside the national union, and its opponents are quick to point out that only a minority of Scottish students are members even now. But, despite this apparent blot on NUS's progress towards a unified student body, the cohesion necessary to form a new union has so far been lacking.

Last year, as the national union made overtures to the rebels to return to the fold, a concerted attempt to get the Scottish Union of Students off the ground appeared likely to succeed, causing more than a few headaches for NUS. But now, after inconclusive debates at St Andrews and Edinburgh Universities support has evaporated, at least temporarily, once more.

It is tempting to equate this apparent wavering among students with the decline in fortunes of Scottish nationalism, manifested in the election results. But both sides agree that, whatever else it is, the question is not primarily a nationalist one, contrary to the generally accepted analysis of casual observers outside Scotland. Indeed, those who campaign for NUS do not rate highly in Mr Currie's list of priorities. Both Edinburgh and St Andrews are

rejoice after a referendum next year, hopes that the disaffiliations would be purely temporary have so far proved mistaken. NUS membership was the least popular option with students at Edinburgh and St Andrews, although voting was relatively close in both cases between NUS and complete independence.

The strongest argument the would-be founders of SUS have is the isolation which the student officers are beginning to feel in the independent unions. While the meetings at Scottish presidents provide a forum for discussing common issues, Strathclyde union has had to make a joint submission with the university authorities on the Government's union finance proposals and there are fears that Edinburgh's lone approach will carry little weight. Mr Ian Abercrombie, president of the Edinburgh student association, said: "There is no doubt we do suffer from the lack of a national voice but I was most disappointed with NUS."

But the previous Scottish union was criticized as ineffective and there is no guarantee that a new SUS would be consulted by government. The NUS argues that negotiations are almost all carried out for the whole of the United Kingdom and it would continue to be the only student voice of significance. "I do not think SUS will get off the ground but, if it does, it will create problems mainly for those students who are members of unions do not rate highly in Mr Currie's list of priorities. Both Edinburgh and St Andrews are

Although he will be visiting the four universities outside NUS and taking part in the non-national campaign at Strathclyde, the breakaway unions do not rate highly in Mr Currie's list of priorities. Both Edinburgh and St Andrews are

Students at Glasgow University. Three universities joined them when they broke with NUS.

traditionally conservative, Glasgow is considered a lost cause for NUS, and he sees the wide divergence of political beliefs as the only reason for the split and the need to keep the sides apart. However, the Strathclyde referendum may be more significant. It is more typical of the student unions than its more conservative counterparts outside NUS and likely to be a better indicator of trends both in Scotland and the land. For, while too much may be made of the Scottish connection, from the fact that disaffiliations have almost exclusively been to unions, which are at one time the best able to cope with national assistance and are thought to lose.

The cost of NUS membership, £18,000 last year for Edinburgh, is still rising sharply for the unions—a major consideration in an inflationary climate where the student unions are at a disadvantage. Where it was previously accepted that NUS would simply be deducted from the following year's budget it is now disaffiliated, some officers now believe that this is not the case and the opportunity to boost its activities.

A proposal to leave NUS was narrowly defeated at Southdown University last term and similar votes are expected at a number of unions in the coming year. This indicates that university students suffer from the government's financial proposals may also rebuke the national union, which is seen by many as prepared to sacrifice the interests of the universities to benefit the smaller colleges.

John O'Leary



Sir Alan Cottrell defines relevant education and relevant research*

The steersman and outrider case

There is an old story that Professor Christol, the mathematician, was asked by his university to teach applied mathematics. At his first lecture he said "You cannot apply mathematics until you have some mathematics to apply" and on this basis he then taught pure mathematics. That was a robust attitude to a problem which, in various forms, faces all academics. We should remember it when challenged on the relevance of university education and research. In saying this—and indeed throughout my talk—I am referring essentially to the position in Britain, for I have little experience of universities elsewhere.

Of course, universities have long endured criticisms from some industrialists that their teaching is not relevant to the needs of the practical world. The cry goes up, in the jargon of the critics' particular industry, "don't you teach your students how to make widgets?" or "train them to be good at mathematics" or "give them some practical skills". On the other hand, some professors have stoutly adhered to the view that all-round ability and versatility rather than a specific skill is what they want to develop in their students.

Many employers understand the nature of university education and research as well as the needs of students today, and perhaps half a dozen others made up a total sure case, today these some few receive the same kind of teaching, still designed for them, but they receive it in classes of 100 or more others. The problem then is—what about all those others? Is the traditional honours school relevant for them? They are not, honours scholars, dedicated to a lifetime of learning, but simply rather bright children who have gone to university because it is fashionable to do so, or is thought to open the way to better jobs, or is a means of keeping options open about their futures.

For these children, when make up the majority of students today, the traditional honours course seems less like a guided walk through an enchanted garden of intellectual delights than a stiff cross-country chase across a rugged and remote landscape, whose main value lies in its enabling them to say afterwards, "well, I had the guts to stick it out and here is my degree to say so."

The problem of the honours schools in an age of mass education has another aspect. Honours schools are specialized. Depth, rather than breadth, is the prized quality and most university students are led to concentrate on single subjects. Departments of history give courses suitable for intending professional historians, those of botany similarly prepare professional botanists, and so on. In fact, in an unusual but justifiable use of the term, they are designed to train people for the profession of academics. The problem is that most students going through such courses are not temperamentally inclined to become professional scholars; nor does society want many of them.

It is, of course, a long tradition in universities to cater for some well-defined, non-academic subject to be turned into a social science. A few even seemed to confuse education with political indoctrination. Looking back today, it seems that this movement was, in Britain at least, a short-lived product of the academically easy times of the early 1960s. Already, by 1971, Mrs Thatcher was telling scientists in Britain that "the party is over"; but her

*This is an edited version of a paper delivered at this week of the Twelfth Commonwealth Universities Congress in Vancouver, British Columbia.

prophetic words had a wider truth than even she may have suspected, for in today's cold climate of financial stringency and high unemployment, students have mostly become less interested in the political colour of their university record than in its job-winning potentialities.

Apart from lack of money, which in a down-to-earth way is a university problem of today, I think that two developments which have set the universities their most deep-seated problems are the growth in student numbers and the growth in university research.

And this is where the first of the problems enters. For the traditional types of courses were designed primarily for diligent and gifted scholars. In the days when less than one per cent of the population went to university, this was quite reasonable. For the child of a country vicarage, brought up with a love of books and serious studies, or the brilliant son of a coal mine, coming out into the world, into various professions, business, public service, as graduate apprentices. The few who opted to become professional scholars would then stay on, to take a further two years or more intensive and specialized training leading to an advanced degree, followed by two years of research for the PhD.

This was a well thought-out scheme and developed in considerable detail. Whether two years is efficient for a first degree is debatable and one might wish to explore alternatives, for example, a three-year first degree course of a generalist kind, followed by a one-year course of a more specialized kind for the scholars, leading to a second degree before these enter upon research. However, it has not so far been possible to give such schemes a real trial. If and when the financial strait-jacket in which universities now find themselves can be eased a little, I hope that some of them could be persuaded to use their unaccustomed freedom to try out a few such schemes.

Over the past 30 years the most rapidly growing and costly—per capita—sector of higher education in Britain has been the postgraduate one—mainly research for higher degrees. The cost of postgraduate study is now about one-quarter of total British university costs. Most of the expansion has been in the natural sciences, although there are also large research schools today in history, social sciences and other subjects.

Government policy for science in the 1950s and 1960s was a simple one of casting bread upon the waters. Large funds were provided for university research and a system devised through the Research Councils and the University Grants Committee for the distribution of these funds to purely academic orifices. Applications for research grants have been decided by "judgment of peers" on the basis of "timeliness and promise". It has all been in the best traditions of the liberal idea of a university. In terms of new fundamental knowledge and understanding gained, it has also been brilliantly successful and our view of the world has been extraordinarily enriched by modern discoveries.

But disillusionment has set in among the politicians. Perhaps they expected too much. High scholarship brought deep knowledge, but not the wisdom for solving the great problems of the day. Scientific research has won its Nobel prizes but not large export orders. Industry has stagnated and the economy has grown only slowly. Disaffection with low growth in the

fessional training, to become schoolteachers. But the facts remain that the numbers of students now entering universities are too large to be absorbed by the professions; and that the traditional honours school, with its emphasis on deep, pure scholarship, is not really suitable for most students. There is much to be said here in favour of the American system in which the first-degree courses are of a broad and fairly elementary kind. The majority of students leave university at this point and go off into the professions, into business, into various jobs in the outside world; and only a small fraction, the true scholars, stay on to make higher degrees.

Some years ago, Professor Ivor Sir Brian Pippard at Cambridge suggested an interesting scheme of this kind, as an alternative to the traditional honours school. The proposal was that all students in, for example, a faculty of science, should spend their first two years taking a degree of a generalist rather than a professional kind. Most would then go out into the world, into various professions, business, public service, as graduate apprentices. The few who opted to become professional scholars would then stay on, to take a further two years or more intensive and specialized training leading to an advanced degree, followed by two years of research for the PhD.

This was a well thought-out scheme and developed in considerable detail. Whether two years is efficient for a first degree is debatable and one might wish to explore alternatives, for example, a three-year first degree course of a generalist kind, followed by a one-year course of a more specialized kind for the scholars, leading to a second degree before these enter upon research. However, it has not so far been possible to give such schemes a real trial. If and when the financial strait-jacket in which universities now find themselves can be eased a little, I hope that some of them could be persuaded to use their unaccustomed freedom to try out a few such schemes.

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midst of high science has been the main reason for the criticisms by some politicians and industrialists that university researches are "irrelevant". Although university research could never be a major contributor to national economic growth—just as a new spark plug could never, by itself, turn an old truck into a modern car—these criticisms persist and perpetuate a view of universities as ivory towers addicted to useless studies. However, governments by and large have not been persuaded by such criticisms. For example, clear evidence that it understood and agreed with the educational and cultural purposes of university research was given a few years ago in the government White Paper "Framework for Government Research and Development" (Cmd. 5046, 1972). This paper laid down the general principles and administrative machinery of the "customer-contractor principle" which enabled various ministries to spend government funds on relevant applied research.

The aspect of this policy of interest here was the rechanneling through these ministries of certain portions of government funds paid to the research councils. What was striking was the actual distribution of the rechanneling, which was plainly designed to leave the universities as free as possible to pursue pure research or part of their advanced educational programmes. This, in the case of the Science Research Council, despite its great size, no funds at all were rechannelled. That the government clearly understood what it was doing is shown by the fact that it described the purpose of its funding of such research as "to develop the sciences as such, to maintain a fundamental capacity for research, and to support higher education."

The criticisms by politicians and others of university research led to an interesting story three years ago. Professor Linnett, then vice-chancellor, investigated "Useful Research in Cambridge University". Engineering and medicine were omitted from the survey, because their usefulness was self-evident, but the report listed a number of researches being done in the natural and social sciences, history, languages, and in various other subjects, that were judged to be immediately and evidently productive in economic and social terms.

The evidence from the arts departments was particularly interesting—a historian helping government archivists to digest public records, researchers in English dealing with problems of public communication by radio and television, orientalist producing new dictionaries and computerizing the Chinese language, and geographers studying under-development and agricultural practices in tropical countries. As Professor Linnett said, unless universities would undoubtedly have no difficulty in producing similarly impressive lists of their useful researches in all subjects.

Most university research is done to train graduate students in the methods of research, to enable academics to teach convincingly in the frontiers of knowledge and to increase knowledge and understanding as an end in itself. Any additional benefits beyond these that university research may bring to society generally, are usually by-products, albeit extremely important ones in some cases. This raises several points. First, are the universities producing too many PhDs, or too many in certain subjects? This may be so in relation to the number of research jobs available in the country. As a result, many bright graduates have been forced, after taking PhDs, to abandon hopes of making careers for themselves in pure research, which has produced in some of them much disappointment and frustration at the start of their careers.

For this reason, I would prefer governmental postgraduate awards to take the form of lower grants, rather than smaller grants. Paying more to fewer may look like elitism, but it is better than encouraging lots of the country's finest young people to enter a road that eventually leads nowhere for them. Whereas universities can perhaps be fairly criticized for irrelevantly overexpanding their research schools, the more commonly heard criticism—that their chosen research topics are irrelevant to the needs of society—is less justifiable. Quite apart from the fact that, as Professor Linnett showed, more university work is useful than is generally supposed, there is the problem of what "relevance" really is.

Usually, being "relevant" means engaging in the public problems of the day. While this must sometimes be the right policy for a university during a great national crisis, and in fact universities generally do then apply themselves wholeheartedly to the problems of the day—nevertheless, under less turbulent conditions a university fulfils its responsibility to the community best by tackling the long-range research problems. But it must be admitted that universities often invite public criticisms of their research work because they generally take little trouble to explain it in simple and interesting terms to the general public.

A country groping its way forward into the uncertain future is like a car on a road of pioneers moving across an unknown land. Not only does it need steersmen to keep it on course; it also needs outriders to go on ahead and discover possible new courses. The function of the universities is both to train the steersmen and to explore the trackless ground ahead. The first is relevant education; the second is relevant research.

The author is vice-chancellor of Cambridge University.

Passionate pursuit of the methodologist's stone

The Methodology of Scientific Research Programmes, Volume I
by Imre Lakatos
edited by John Worroll and George Currie
Cambridge University Press, £30.00
ISBN 0 521 21644 3

Mathematics, Science and Epistemology
Philosophical Papers, Volume II
by Imre Lakatos
edited by John Worroll and George Currie
Cambridge University Press, £10.50
ISBN 0 521 21769 5

What makes a theory scientific? What makes one scientific theory better than another? These interesting and not unimportant questions were the primary focus of Professor Lakatos's brief but productive philosophical career. These two volumes which contain all but five of his published papers and two previously unpublished papers have a pleasing unity generated by his passionate conviction that "the central problem in philosophy of science is the problem of the normative appraisal of scientific theories"; and, in particular, the problem of stating universal conditions under which a theory is scientific" (1, 168).

Lakatos says himself concerning the difficulties in and developing the insights of the Popperian model of science in comparison with which Lakatos's own account has certain attractions. For Popper, he says, "the scientific theory must be falsifiable. That is, it must be possible to subject the theory to an empirical test. If the outcome of the test is negative the theory is to be rejected. If the outcome is positive we are not to regard this as constituting evidence that the theory is true or even that it has some probability of being true. For to do this would be to indulge in 'pernicious inductivism'." Thus for Popper the application of scientific method is not a matter for developing theories for which there is stronger and stronger evidence, rather it is a matter of boldly conjecturing new as yet unfalsified theories of greater content which will in their turn be rejected.

Given Popper's assumptions about inductivism his anti-inductivism creates the dilemma that we can have nothing more than ungrounded hope that science progresses towards truth. Lakatos, whose admiration for Popper is tempered by frequent lively and forceful attacks on him in these papers, objects vigorously that Popper makes science a two-cornered fight between a theory and the world—a fight which the world wins every time. For as we are rightly reminded, "theories are not borne falsified in all theories, even the most successful, generate from the start some unsuccessful predictions. If we were to reject theories for this reason we would not have any science at all."

Lakatos, echoing Duhem, argues that our theories have a tenacity that allows us to face unsuccessful predictions with equanimity by buying the blame on something other than the theory itself. Human ingenuity being what it is, any theory can be saved from falsification and consequently we cannot with Popper delimit the scientific as the sphere in which theories are vulnerable to the outcome of a particular test. It will only do to respond as Popper

would that to be scientific is to be willing to specify in advance the circumstances in which one will stop being ingenious and will reject the theory. Having the Popperian axe against Freud and Marx in this way will denigrate Newton and Einstein who did not and could not have specified the particular outcomes which would have led them to abandon their theories.

Lakatos's suggestion as presented and developed in these volumes is that a fair fight requires us to play theories off against each other with the world as referee. No theory should be abandoned except in the face of a better rival theory and even then judgment should not be made until the original theory has been given a fair innings during which its proponents try various modifications in the hope of improving it. Thus for Lakatos the basic unit of appraisal is not a single theory but a scientific research programme (or SRP) constituted by an evolving sequence of theories sharing a common heuristic and heuristic.

The heuristic contains the theoretical postulates that the proponents are determined to stick by in the face of difficulties and the heuristic includes various hints and suggestions as to how the theory might be modified. An SRP is progressive so long as it generates theories which successfully predict novel facts and it is degenerative if it gives only *post hoc* explanations of either chance discoveries or of facts anticipated by and discovered in a rival programme" (1, 112).

In spite of the spirited attempt in these papers, problems abound. For instance, we are not provided with any workable criterion for determining the heuristic and heuristic of an SRP. Nor are we told how to compare theories with regard to their ability to produce novel facts. We cannot just opt these up like apples! Note the less useful is to be learned in these studies particularly through Lakatos's ingenious (sometimes too ingenious) attempts to interrelate the history and philosophy of science.

The model set in various uses including a defence of the popular usage of science as the very paradigm of institutionalized rationality. On this image science possesses a special methodology (for Lakatos that of SRP) which is practically dispassionate and methodically applied in the pursuit of truth. When the scientific community changes its allegiance from one theory to another this is to be explained by and large by the fact that the community truly perceived that one theory was objectively better than the other in virtue of being part of a more progressive SRP.

Kuhn and Feyerabend who aim to tarnish this image argue to the contrary that such transitions cannot be rationally justified and are to be explained in terms of social and psychological factors such as the force of the personality of the various theoreticians, the social climate of the times, and so on. Lakatos who scathingly dismissed them ("In Kuhn's view scientific revolution is irrational, a matter for psychoanalysis" 1, 91) sought through historical studies to show that scientific change can be rationally justified in terms of his model.

As a more in what he saw as the

irrationality his case is unconvincing. No one including Lakatos would deny that some role needs to be accorded to social and psychological factors. However, the campaign against Lakatos's position means that no synthetic attention is given to the problems of identifying and assessing the importance of these factors. And, more seriously, his single-minded concern with methodological issues prevents him from trying to bring to the more substantial aspects of the position of Kuhn and Feyerabend. For their case ultimately rests on their thesis of the incommensurability of theories according to which there is no neutral language within which competing theories can be formulated. This being so, the languages of the proponents of rival theories are not inter-translatable and their assertions simply pass each other by. Consequently as theories, simply cannot be compared. The question of assessing their relative merits simply does not arise. To have dealt with this problem which is not even discussed in these volumes would have required excursions into the areas of philosophy—the theory of language and meaning, and the philosophy of science—into which Lakatos seems to have studiously avoided.

In addition to serving in defence of the rationality of science, the methodology of SRP is intended to provide an answer to the demarcation problem. As with Popper the pseudoscientific culprits are Freud and Marx. "Thus, for instance, Marxism ever predicted a startling novel fact successfully? Never!" (1, 5). Referring again to Marx and Freud we are told that "they did not add up in a genuine research programme and are, on the whole, worthless" (1, 88). So in fact to be scientific is to be able to predict novel facts. One does not have to be Marxist or a Freudian to feel uneasy about this equation of worthlessness with non-progressiveness. Which if used or could have the effect of blinding one to the insights of these not unimportant pseudoscientists.

The question arises as to why Lakatos felt so passionately about distinguishing between the scientific and the pseudoscientific. His thesis that this distinction is of "vital social and political relevance" (1, 11) is said to be illustrated through the claims of the Church of England. The Church claims that Christ came to earth because it was said to be pseudoscientific. The claim is dubious as the drawing of this distinction is a later-day event, for any event there is a touching naivety about the subtextual claim. Are we to suppose that if the label "scientific" has been successfully applied to the theory, the endorsement of the authorities would have melted away? Not a bit of it. A theory which appears to be threatening to an authority disposed to suppress what it takes to be a threat will be rationalized under one label or another, and as well imagine the church rejoicing that if this is science, so much the worse for science. One is left wondering whether this enthusiasm for science and pseudoscience betokens a failure to appreciate that science is not the only form of activity governed by reason.

The methodology of SRP is not only to be used in denunciation of those who are to be employed in the

in non-guiding fashion with regard to contemporary science. Editors of journals are to refuse to publish papers of those working out degenerating programmes and research foundations, too, should exclude money" (1, 117). Even if one held this non-liberal view that the degenerates should go in the wall with the pseudo-scientists, one might wonder whether Lakatos's own work is not itself a degenerating programme. For on his own admission SRPs which turn out to be spectacularly progressive may go through degenerating phases. Lakatos's response is that it is rational to work on the hope of change in fortune. But once this concession is made, the single-minded action-guiding force of his methodology is dissipated. Hope springs eternal and even Freud and Marx can "rationally" work on hoping to become progressive.

The moral to be drawn is that since this latter day philosopher's stone which is to distinguish the good from the bad is so elusive one ought to wonder whether there is any such stone to be discovered. To say this is not necessarily to endorse the hope of change in fortune. But once this concession is made, the single-minded action-guiding force of his methodology is dissipated. Hope springs eternal and even Freud and Marx can "rationally" work on hoping to become progressive.

These volumes are richer than the emphasis I have given to the unifying concern with the methodological question. Lakatos develops the theme that contrary to what we would hold the methods of mathematics are not all that dissimilar to those of science. In the course of these papers we are given the history of the philosophy of science as the history of the philosophy of mathematics. We have already noted that his failure to take problems of meaning seriously means that he is unable to come to grips with the most challenging and interesting aspects of the philosophy of science. And his discussions of truth are not adequate to the problems this concept poses for his own position.

Like Popper, Lakatos takes it that the goal of science is truth rather than the interest of producing a publishable paper. One hopes that in some extent his reluctance stemmed from the occasional polemical tone which ill suits his intellectual position in the pursuit of truth. The papers in these volumes do give a sense of his lively and forceful personality that made him such a stimulating lecturer. This is a whole and a lively work by the author's dedication with which he pursued the methodology of science. In the end it is perhaps more through the manner of his pursuit than through the influence that he has rightly brought to bear in his approach to his performance with Kuhn and Feyerabend, the service of directing the attention of philosophers of science to the problems of science. And by entering the lists against Kuhn and Feyerabend bearing the colours of rationality, he has helped to defuse a substantial and important debate on which these often provocative papers should serve to stimulate further fruitful work.

W. H. Newton-Smith

able phenomenon. No theoretical science is possible if such a picture of inference is judged illegitimate. If, pace Popper, it is accepted as legitimate, why not apply it to science itself?

Lakatos holds that within a progressive SRP succeeding theories are better at predicting novel facts. One might then argue for the hypothesis of the effects of the popular culture on the progress of the SRP. Lakatos's hypothesis provides the best explanation of the increasing predictive power. For it would be most mysterious that our theories should be increasing in predictive power if they were not capturing more of the truth about the world. On the other hand, Lakatos's hypothesis would serve to establish the practice of science as a rational activity. Lakatos's methodology is not a single-minded pursuit of a single-minded purpose. It is a methodology which is certain traditional questions. Lakatos's investigations within a methodology of science are not a single-minded pursuit of a single-minded purpose. It is a methodology which is certain traditional questions.

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Weathered world

Climate Change, Agriculture and Environment
by M. L. Parry
Havron, £30.00
ISBN 0 208 01722 4

The renewal of interest in climatic change results partly from an increasing awareness of the possible socio-economic impact of such change, accentuated by the popularization of the effects of the 1968-73 El Niño drought being brought into focus during the television. The increasing tendency to assert that the problem is less vital, for similar comments were being made 30 years ago when I was a student. What is true was some 30 years ago is true now. The book considers these interrelationships in a historical context, focusing on the last 1,000 years and the effects of the 1968-73 El Niño drought on agricultural and rural settlement in north-western Europe and North America. However, it is not a definitive text on this theme, but rather an interesting exploratory essay.

Each section looks at possible impact of climatic change and at the recent chronology. The outline is both slight and superficial, but the summary of information and the discussion of the influence of climate on harvest yield and famine, and this is essentially a qualitative argument, with the role of place physiological responses largely considered. However, extensive reference to broad-scale extrapolation is placed on the one page case study of the Lammert Hills.

This study is used in many other regions, often because it is the only detailed inquiry available.

Stanley Gregory

although the well-documented cases of Iceland and Norway are woven into the theme of the changing limits of cultivation, while the Eastern Mediterranean, the Middle East and the great plains of North America are also occasionally included. This selection of examples reflects the author's essential thesis that the maximum impact of climatic change will be seen reflected in marginal areas, where the return on farming investment is barely adequate, and where crop growth itself is also marginal. He also argues that it is the longer term changes of climate, rather than year to year fluctuations, that have the more lasting economic effects, but in his final chapter he presents a number of well-documented case studies of the results of striking short-term changes from 1345-6 and the 1590s to the past few decades of the nineteenth century.

Throughout the volume the author discusses and emphasizes a number of basic difficulties in this field of inquiry, including the danger of circularity of argument, the climatic change possibly influencing crop growth has itself often been defined on historical or crop evidence, and the legitimacy of inferring climate as a cause of cultural change when the cultural are both changing coincidentally with climate and independent evidence of cause and effect is absent. All too often, such evidence as there is seems to be the result of circularity of argument, the climatic change possibly influencing crop growth has itself often been defined on historical or crop evidence, and the legitimacy of inferring climate as a cause of cultural change when the cultural are both changing coincidentally with climate and independent evidence of cause and effect is absent. 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seen as the messenger of God to Africa: he is to Africans as Jesus is to Europeans. The Apostles of Johnne Masoro cannot then he said (as Simon Kimbangu's certainly can) to form a Christian church: they are the Church of Muswac.

All these features relate to the most salient characteristic of the Apostles, their simple self-sufficient independence, their creation of communities of their own kind, bounded against the world. The nickname, the Korsten Basketsnakers, is a reflection of this, deriving from the time they spent in the Amsterdam suburb of Korsten. The Apostles employed in the handicrafts that gave them economic independence. The name faces both ways: to the Apostles it recalls the security and well-being of that former community, but to others it denotes their distinctiveness as a group, a distinctiveness maintained in many ways.

benefits, rigorous, and, at times, extremely valuable early statements and texts reprinted. Sympathetic at a distance, the account is very different in tone and insight from Jules-Rosette's recent book on her experience with the companion Jesus Maranke Apostles.

The most frustrating part of the present book derives from what it shows so clearly: the wounded, encapsulated nature of the Apostolic communities. What is the social space of these communities? How are the statuses of formal leadership accorded and exercised? What part is played by non-Shoosha and how do they relate to the Shoosha core? Something is said to answer to these questions, but the reader is indeed really to understand the movement.

This need not be seen (as Dillie Melone tends to see it) as an attack on traditional Shona beliefs, but rather as the use of that idiom to achieve moral reform: people were to abjure evil. Third, Musowe was

The "message" of this African Jobn of the Wilderness roletas very closely and at more than one level to his own role as medium.

Malcolm Ruel

Dr Derek Prosser is senior lecturer in history at Bradford University and author of *Urban Politics in Victorian England*;

T. W. Freeman was formerly professor of geography at Manchester University;
Professor Stanley Gregory is author of many papers on climatology. His books include *Rainfall over Sierra Leone*;

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Dr Alon Lee is author of *The Origins of the Popular Press* ;
Brian McLoughlin is in the department of town and country planning, Liverpool Polytechnic ;

Dr W. H. Newton-Smith is senior tutor, Balliol College, Oxford;
Maurice Punch teaches sociology at the Netherlands School of Business;
Dr Malcolm Ruel is a fellow of Clare College, Cambridge;

F. Graham Smith is director of the Royal Greenwich Observatory ; Dr Michael Watts's book The Disasters (volume 1) was published earlier this year ; John Woodword is author of To Do the Sick No Harm : a study of

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The Council of the University invites applications from suitably qualified persons for the post of Vice-Chancellor of the Papua New Guinea University of Technology.

The Vice-Chancellor is the Chief Academic and Administrative Officer of the University. The salary is Public Service Commission level 4, at K9,795 p.a. Overseas allowances will be payable wherever applicable. The appointment will be initially for a period of three years.

Candidates should preferably have a University degree together with demonstrated experience and understanding of technical processes, education or research, and considerable experience in education or research, preferably with a period as a University teacher. Experience in academic or public administration at a senior level would be an advantage.

Candidates should be able to demonstrate an understanding of, and sympathy for, the declared aspirations of Papua New Guinea for National development and a determination to see that the University's objectives reflect those National aspirations. Proven capacity for efficient management, and for providing leadership in a multicultural environment will be looked for, together with a reputation for fairness in dealings with staff, students and colleagues, and good personal relations with colleagues, subordinate staff and students. Successful tertiary administrative and academic experience in a developing country and a personal life style in keeping with National ways of life are highly desirable with an outgoing personality and ability to mix well. It would be an advantage if the holder of the post were married with experience and willingness to entertain staff and official visitors.

Applications should include particulars of ego, marital status, qualifications, experience, present position, availability and the names and addresses of three referees from whom confidential enquiries may be made.

Further information may be obtained on application to the Registrar of the University. The closing date for the receipt of applications is 22nd September, 1978, and these should be addressed to: Mr. J. Irving Gae, Registrar, Papua New Guinea University of Technology, P.O. Box 793, Lae, Papua New Guinea.

The University reserves the right to make an appointment by invitation at any stage.

An additional copy of application should be sent to the Secretary General, Association of Commonwealth Universities (Appis.), 39 Gordon Square, London WC1H 0PF.

University of London

Department of Administration and Services

Administrative Officer Grade II

86,767-87,754

Applications are invited for the post of Administrative Officer (Grade II) in the Finance Section on the promotion of Mr. P. J. Giffiths.

The main duties would involve preparing reports, agendas and minutes for Senate Committees dealing with finance, staffing and general matters, and assistance with estimates and allocation in respect of the Central Office and Senate Institutes and Activities.

Relevant experience together with a degree or professional qualification desirable.

Salary Scale £9,317 to £7,554 plus £450 London Allowance (from 1st October, 1979).

Further particulars obtainable from the Personnel Officer, Senate House, University of London, Moat Street, London WC1E 6BT. Telephone 936 8000 ext. 15.

Closing date 9th September, 1978.

Colleges and Institutes of
Higher Education
Colleges and Departments
of Art
Research Posts
Administration
Overseas
Adult Education
Librarians
General Vacancies

Official Appointments
Appointments wanted
Other classifications
Awards
Announcements
Exhibitions
Personal
Courses
Holidays and Accommodation

TECHNICAL PERSONNEL REQUIRED FOR ENGINEERING OFFICE

YARMOUK UNIVERSITY, JORDAN

The Engineering Office of Yarmouk University is in need for the services of the following Technical Personnel. Architect: University graduate plus 10 years of experience in Architectural design of Large Educational Projects, mainly Facilities of Engineering and/or Medical Sciences. Two required, Nov. 1978.

Structural Engineer: University graduate plus 10 years of experience in Structural design of Large Educational or Similar Projects, R.C. Structures, Prestressed and Posttensioned concrete elements. One required, Nov. 1978.

Mechanical Engineer: University graduate plus 5 years of experience in Central Air Conditioning and Heating Design, Water and Sewage Systems. One required, Jan. 1979.

Electrical Engineer: University graduate plus 5 years of experience in Electrical Power Stations, External and Internal Electrical Installations Design. One required, Jan. 1979.

Medical Equipment Specialist: Adequate experience in Medical Equipment (Requirements and Technical Specification) for Medical Schools and Hospitals. One required, March 1979.

Engineering Equipment Specialist: Adequate experience in Engineering Workshops and Laboratory Equipment (Requirements and Technical Specification) for Faculty of Engineering. One required, March 1979.

Applications may be submitted, not later than 30 September, 1978, to the following address:

Yarmouk University, Engineering Office
P.O. Box 20184, Amman, Jordan

The following documents should be attached with the application:

One copy of the applicant's curriculum vitae.
One photo of the applicant.

One copy of the educational and/or professional certificates.

Salary and benefits will be determined on the basis of qualifications and experience.
Working Language is Arabic or English.

COLAISTE NA HOLLSCOILE CORCAIGH

UNIVERSITY COLLEGE, CORK

ASSISTANT CAREERS & APPOINTMENTS OFFICER

Applications are invited from university graduates and other professionally qualified persons for the above newly created post.

The Dean of Student Affairs has responsibility for the Careers & Appointments Office which provides an advisory service for a student population of approximately 4,500.

EXPERIENCE: Previous experience of and training in careers advisory work is desirable. The successful candidate will have the necessary experience and maturity to deal with employers, university teaching staff and graduate and post-graduate students, and will probably have experience in fields which employ graduates in considerable numbers.

SALARY: £4,747 to £5,853. A candidate with acceptable experience may commence at a point above the minimum.

PENSION: The personal pension is non-contributory. Male staff contribute 1.1% for the Widows' and Children's pension scheme.

Application form and further details of the post are available. Please send postcard to: Establishment Officer, University College, Cork.

Closing date for completed applications: Friday, 22 September, 1978.

UNIVERSITY COLLEGE, GALWAY, IRELAND

PROFESSORSHIP OF SPANISH

The Governing Body of the College proposes to advertise the filling of the above Professorship shortly, for an appointment to be made early in 1979. Persons who may be interested in applying for the post in due course are invited to write for details of the Conditions and other aspects of the appointment in advance of the formal advertisement. Enquiries should be addressed to: The Registrar, University College, Galway, Ireland.

UNIVERSITY OF NEW ENGLAND

Armidale, New South Wales

Professor of Psychology

The University wishes to fill the Chair of Psychology which will be vacant on the retirement of Professor E. H. Bental in December, 1979. The appointee will be Head of the Department for five years in the first year. The Department is responsible for teaching in the field of Psychology and is currently expanding its range of psychology to extend as well as internal studies, both undergraduate and postgraduate levels.

Applicants should be of high academic standing, published extensively in their field, and have a good interest in promoting the research activities of the Department.

Conditions of Service include assistance with travel, removal expenses and assistance in buying a house. Superannuation will be on the FSSU plan, but that of the N.S.W. Superannuation Scheme may be opted for. Salary will be in the range of £15,000 to £20,000 p.a. depending on qualifications and experience.

Further particulars and application forms may be obtained from the Association of Commonwealth Universities (Appis.), 39 Gordon Square, London WC1H 0PF, or to Professor Burral, Head of the Department of Psychology, in the University.

Closing date for applications: 7 November, 1978.

UNIVERSITY OF NEW ENGLAND

Armidale, New South Wales

TEMPORARY LECTURESHP

Three Year Appointment in Agricultural Economics

Applications are invited for the above mentioned position in the Department of Agricultural Economics, Business Management. Preference will be given to applicants with expertise in agricultural marketing, price analysis. Applicants will be expected to teach at all undergraduate levels and is supervising postgraduate students. They should have a higher degree or equivalent research experience.

Salary will be within the range of \$15,170-\$20,000 p.a. depending on qualifications and experience. Conditions of service include assistance with travel and removal expenses and temporary accommodation.

Informal enquiries should be made to Professor D. J. Dill, in the University.

Further information is available from the Staff Officer, University of New England, Armidale, New South Wales, Australia 2351, or from the Association of Commonwealth Universities (Appis.), 39 Gordon Square, London WC1H 0PF.

Applications should include a full curriculum vitae and the names and addresses of three referees.

CLOSING DATE: 15 September 1978.

Applicants in the United Kingdom, Europe and Australia should forward their applications to the Association of Commonwealth Universities, and send a copy to the Staff Officer, Other applicants should forward their applications to the Staff Officer, without delay.

HONG KONG

THE UNIVERSITY OF HONG KONG

Applications are invited for a post of Lecturer in the Department of Education. The post is in the field of Educational Psychology and is a full-time position. The successful candidate will be responsible for teaching and supervising postgraduate students. The post is at the level of Lecturer Grade 2. The salary scale is HK\$15,000 to HK\$20,000 p.a. depending on qualifications and experience. Conditions of service include assistance with travel and removal expenses and temporary accommodation. Further particulars and application forms may be obtained from the Registrar, The University of Hong Kong, Pokfulam, Hong Kong.

Universities continued

CANBERRA COLLEGE OF ADVANCED EDUCATION

Australia

SCHOOL OF TEACHER EDUCATION

Lecturer in Early Childhood Education

As an appointment will be made

to a Lecturer Grade 2 or Grade 3

in the School of Teacher Education

at Canberra College of Advanced Education

in the Department of Education

at Canberra College of Advanced Education

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LA TROBE UNIVERSITY

Melbourne

Lo Trobe

Research Fellowships

Applications are invited for the

post of Research Fellowships

in the Department of Education

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in the Department of Education

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at La Trobe University

UNIVERSITY OF SIERRA LEONE

Njala University College

Applications are invited for the

post of

PROFESSOR/ASSOCIATE

PROFESSOR IN ENGLISH

In the Faculty of Education,

at Njala University College

in the Department of Education

Universities continued

BELFAST

The Queen's University

LECTURES IN MEDIEVAL HISTORY

A lectureship in medieval history within the Department of History, to be held from 1 October 1978, or such other date as may be arranged. The person appointed will teach the history of medieval Europe, including England and Ireland, with special responsibility for the early part of the period. Research qualifications in Anglo-Saxon and/or early Irish history are required. Initial placement will depend on experience and qualifications. Salary will be £12,000 per annum, plus pension rights under the FRSU/UGS. Further particulars may be obtained from the Registrar, The Queen's University, Belfast, BT7 1NN, Northern Ireland. Closing date 16 September 1978. (Please quote Ref. 78/THS).

University of Wales

Research Assistant

Applications are invited for the post of Research Assistant in the Department of Chemical Engineering, to work on a project studying the behaviour of flexible fibres in suspension, with particular reference to paper making. The project will be carried out in collaboration with the paper industry. The successful candidate will be encouraged to continue for a Ph.D. The appointment, which will be for two years from 1 October 1978, will be on a full-time basis, with a salary of £5,000 per annum, plus £250/UGS. Further particulars and applications should be obtained from the Personnel Officer, University College of Swansea, Singleton Park, Swansea SA2 8PP, to whom they should be returned by Monday, 19 September 1978.

ULSTER

The New University School of Biological and Environmental Studies

LECTURES IN PSYCHOLOGY

Applications are invited for a Lectureship in Psychology, to be held from 1st January 1979. Applicants for one of the posts should have an interest in industrial or social psychology; for the other post no particular specialisation is required. Salary scale: £3,883-£7,754 per annum (with FRSU/UGS). Further particulars may be obtained from the Registrar, The New University of Ulster, Coleraine, Northern Ireland BT52 1SA, (quoting Ref. 78/100), to whom applications, together with a curriculum vitae and the names and addresses of three referees, should be returned not later than 13th October, 1978.

ULSTER: THE NEW UNIVERSITY

School of Social Sciences

Lecturer in Human Biology

A Lecturer in Human Biology is required to teach in the Nursing Studies programme. The post is available from 1st January 1979, or such other date as may be arranged. Medical qualifications are not necessary. Knowledge and experience of nurse education would be an advantage. Salary scale: £3,883-£7,754 per annum (with FRSU/UGS). Further particulars may be obtained from the Registrar, The New University of Ulster, Coleraine, Northern Ireland BT52 1SA, (quoting Ref. 78/99), to whom applications, including the names and addresses of three referees, should be sent not later than 13th September, 1978.

BIRMINGHAM

UNIVERSITY OF ASTON

DEPARTMENT OF SAFETY AND HYGIENE

Applications are invited for a Lectureship in Safety and Hygiene, to be held from 1 October 1978, or such other date as may be arranged. The person appointed will teach the history of safety and hygiene in industry, with special responsibility for the early part of the period. Research qualifications in Safety and Hygiene are required. Initial placement will depend on experience and qualifications. Salary will be £12,000 per annum, plus pension rights under the FRSU/UGS. Further particulars may be obtained from the Registrar, The University of Aston, Birmingham, B4 7ET, to whom they should be returned by Monday, 19 September 1978. (Please quote Ref. 78/THS).

LIVERPOOL

THE UNIVERSITY

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

Applications are invited for a Lectureship in Electrical and Electronic Engineering, to be held from 1 October 1978, or such other date as may be arranged. The person appointed will teach the history of electrical and electronic engineering in industry, with special responsibility for the early part of the period. Research qualifications in Electrical and Electronic Engineering are required. Initial placement will depend on experience and qualifications. Salary will be £12,000 per annum, plus pension rights under the FRSU/UGS. Further particulars may be obtained from the Registrar, The University of Liverpool, Liverpool, L69 3GB, to whom they should be returned by Monday, 19 September 1978. (Please quote Ref. 78/THS).

UNIVERSITY OF GLOUCESTER

MUSIC DEPARTMENT

Applications are invited for a Lectureship in Music, to be held from 1 October 1978, or such other date as may be arranged. The person appointed will teach the history of music in industry, with special responsibility for the early part of the period. Research qualifications in Music are required. Initial placement will depend on experience and qualifications. Salary will be £12,000 per annum, plus pension rights under the FRSU/UGS. Further particulars may be obtained from the Registrar, The University of Gloucester, Gloucester, GL1 2PL, to whom they should be returned by Monday, 19 September 1978. (Please quote Ref. 78/THS).

MANCHESTER

THE UNIVERSITY

DEPARTMENT OF PHYSICS

Applications are invited for a Lectureship in Physics, to be held from 1 October 1978, or such other date as may be arranged. The person appointed will teach the history of physics in industry, with special responsibility for the early part of the period. Research qualifications in Physics are required. Initial placement will depend on experience and qualifications. Salary will be £12,000 per annum, plus pension rights under the FRSU/UGS. Further particulars may be obtained from the Registrar, The University of Manchester, Manchester, M13 9PL, to whom they should be returned by Monday, 19 September 1978. (Please quote Ref. 78/THS).

IRAN

THE ENGLISH LANGUAGE

DEPARTMENT OF LINGUISTICS

Applications are invited for a Lectureship in English Language, to be held from 1 October 1978, or such other date as may be arranged. The person appointed will teach the history of English language in industry, with special responsibility for the early part of the period. Research qualifications in English Language are required. Initial placement will depend on experience and qualifications. Salary will be £12,000 per annum, plus pension rights under the FRSU/UGS. Further particulars may be obtained from the Registrar, The University of Iran, Tehran, Iran, to whom they should be returned by Monday, 19 September 1978. (Please quote Ref. 78/THS).

IRAN

THE ENGLISH LANGUAGE

DEPARTMENT OF LINGUISTICS

Applications are invited for a Lectureship in English Language, to be held from 1 October 1978, or such other date as may be arranged. The person appointed will teach the history of English language in industry, with special responsibility for the early part of the period. Research qualifications in English Language are required. Initial placement will depend on experience and qualifications. Salary will be £12,000 per annum, plus pension rights under the FRSU/UGS. Further particulars may be obtained from the Registrar, The University of Iran, Tehran, Iran, to whom they should be returned by Monday, 19 September 1978. (Please quote Ref. 78/THS).

NORWICH

UNIVERSITY OF EAST ANGLIA

DEPARTMENT OF EDUCATION

Applications are invited for a Lectureship in Education, to be held from 1 October 1978, or such other date as may be arranged. The person appointed will teach the history of education in industry, with special responsibility for the early part of the period. Research qualifications in Education are required. Initial placement will depend on experience and qualifications. Salary will be £12,000 per annum, plus pension rights under the FRSU/UGS. Further particulars may be obtained from the Registrar, The University of East Anglia, Norwich, NR4 7TJ, to whom they should be returned by Monday, 19 September 1978. (Please quote Ref. 78/THS).

SOUTH AFRICA

UNIVERSITY OF JOHANNESBURG

DEPARTMENT OF LINGUISTICS

Applications are invited for a Lectureship in Linguistics, to be held from 1 October 1978, or such other date as may be arranged. The person appointed will teach the history of linguistics in industry, with special responsibility for the early part of the period. Research qualifications in Linguistics are required. Initial placement will depend on experience and qualifications. Salary will be £12,000 per annum, plus pension rights under the FRSU/UGS. Further particulars may be obtained from the Registrar, The University of Johannesburg, Johannesburg, South Africa, to whom they should be returned by Monday, 19 September 1978. (Please quote Ref. 78/THS).

MANCHESTER

THE UNIVERSITY

DEPARTMENT OF PHYSICS

Applications are invited for a Lectureship in Physics, to be held from 1 October 1978, or such other date as may be arranged. The person appointed will teach the history of physics in industry, with special responsibility for the early part of the period. Research qualifications in Physics are required. Initial placement will depend on experience and qualifications. Salary will be £12,000 per annum, plus pension rights under the FRSU/UGS. Further particulars may be obtained from the Registrar, The University of Manchester, Manchester, M13 9PL, to whom they should be returned by Monday, 19 September 1978. (Please quote Ref. 78/THS).

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SHEFFIELD

THE UNIVERSITY

DEPARTMENT OF EDUCATION

Applications are invited for a Lectureship in Education, to be held from 1 October 1978, or such other date as may be arranged. The person appointed will teach the history of education in industry, with special responsibility for the early part of the period. Research qualifications in Education are required. Initial placement will depend on experience and qualifications. Salary will be £12,000 per annum, plus pension rights under the FRSU/UGS. Further particulars may be obtained from the Registrar, The University of Sheffield, Sheffield, S10 2TN, to whom they should be returned by Monday, 19 September 1978. (Please quote Ref. 78/THS).

SOUTH AFRICA

UNIVERSITY OF THE WITWATERSRAND

DEPARTMENT OF EDUCATION

Applications are invited for a Lectureship in Education, to be held from 1 October 1978, or such other date as may be arranged. The person appointed will teach the history of education in industry, with special responsibility for the early part of the period. Research qualifications in Education are required. Initial placement will depend on experience and qualifications. Salary will be £12,000 per annum, plus pension rights under the FRSU/UGS. Further particulars may be obtained from the Registrar, The University of Witwatersrand, Johannesburg, South Africa, to whom they should be returned by Monday, 19 September 1978. (Please quote Ref. 78/THS).

SOUTH AFRICA

UNIVERSITY OF JOHANNESBURG

DEPARTMENT OF LINGUISTICS

Applications are invited for a Lectureship in Linguistics, to be held from 1 October 1978, or such other date as may be arranged. The person appointed will teach the history of linguistics in industry, with special responsibility for the early part of the period. Research qualifications in Linguistics are required. Initial placement will depend on experience and qualifications. Salary will be £12,000 per annum, plus pension rights under the FRSU/UGS. Further particulars may be obtained from the Registrar, The University of Johannesburg, Johannesburg, South Africa, to whom they should be returned by Monday, 19 September 1978. (Please quote Ref. 78/THS).

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THE POLYTECHNIC

HUDDERSFIELD

Department of Behavioural Sciences

RESEARCH ASSISTANT-PSYCHOLOGY

The successful applicant will be engaged on a part-time project concerned with the control of processing capacity. Ref. ACA/7252

Department of Music

RESEARCH ASSISTANT

Applications are invited from suitably qualified persons for the post of Research Assistant in the Department of Music, to be held from 1 October 1978, or such other date as may be arranged. The person appointed will teach the history of music in industry, with special responsibility for the early part of the period. Research qualifications in Music are required. Initial placement will depend on experience and qualifications. Salary will be £12,000 per annum, plus pension rights under the FRSU/UGS. Further particulars may be obtained from the Registrar, The Polytechnic of Huddersfield, Huddersfield, HD1 1BA, to whom they should be returned by Monday, 19 September 1978. (Please quote Ref. 78/THS).

Department of Music

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THE POLYTECHNIC

LEEDS

School of Accounting and Applied Economics

LECTURER II IN ACCOUNTING (TWO POSTS)

Applications are invited from suitably qualified candidates with a particular interest in either Financial Accounting or Management Accounting. Initial appointments will be at an appropriate point on the Lecturer II scale, but progression to Senior Lecturer level can normally be anticipated. School of Health and Applied Sciences. Ref. ACA/1616

School of Health and Applied Sciences

LECTURER II IN NUTRITION AND DIETETICS

Applications are invited from Siala Registered Dietitians, who have recent clinical experience, to join a team involved in the teaching of degree and diploma students. It is anticipated that the successful applicant will undertake research in the section, which will also assist in the development of student projects. The post will also carry responsibility for certain clinical aspects of the course. Salary Scale: £4,101-£6,558. Ref. ACA/1616

School of Health and Applied Sciences

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School of Health and Applied Sciences

LECTURER II IN NUTRITION AND DIETETICS

Applications are invited from Siala Registered Dietitians, who have recent clinical experience, to join a team involved in the teaching of degree and diploma students. It is anticipated that the successful applicant will undertake research in the section, which will also assist in the development of student projects. The post will also carry responsibility for certain clinical aspects of the course. Salary Scale: £4,101-£6,558. Ref. ACA/1616

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Polytechnics continued

Leeds POLYTECHNIC

School of Accounting and Applied Economics

LECTURER II IN ACCOUNTING (TWO POSTS)

Applications are invited from suitably qualified candidates with a particular interest in either Financial Accounting or Management Accounting. Initial appointments will be at an appropriate point on the Lecturer II scale, but progression to Senior Lecturer level can normally be anticipated. School of Health and Applied Sciences. Ref. ACA/1616

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GWENT COLLEGE OF HIGHER EDUCATION

Faculty of Science and Technology

a) TEMPORARY LECTURER I/II

Required as soon as possible to teach Industrial Measurement and Control topics to City and Guilds Part III level or equivalent.

b) TEMPORARY LECTURER I/II

Required as soon as possible to teach general Electrical and Electronic Engineering topics to H.N.D. level or equivalent.

Both the above posts are tenable until August 31, 1981. Candidates must have appropriate qualifications and industrial experience. Salary range £13,992 to £15,134. LII £4,101 to £6,051.

For further details and application forms apply to: Principal Administrative Officer, Gwent College of Higher Education, College Crescent, Caerleon, Newport, Gwent NP23 1JX.

Closing date for applications, Friday, September 5, 1978.

Administration

Scientific Administration

in the

Science Research Council

The Science Research Council is one of five Research Councils funded by the Science Vote. It is responsible for developing research and training in all branches of fundamental science and technology which it does using its own establishments and by giving grants to support work in universities and other institutions.

To help it discharge its responsibilities the Council has a number of Advisory Committees and Panels which are run from the Central Office in Swindon. A number of vacancies have arisen for young scientists in several of these Advisory Committees. The duties include the examination of grant applications, the organization and management of committees, liaison with universities and co-operation with academic, industrial and Government research establishments.

Candidates, who should preferably be under 27, must possess a Science degree with First or Second Class Honours (or a higher qualification). An aptitude for administration is essential and successful applicants will be expected to develop scientific knowledge and interests and their own particular disciplines and interests.

Salaries will be related to age and experience but will be on the Scientific Officer/Higher Scientific Officer scale between £2,630 and £4,101 although exceptionally a higher salary may be offered for particularly relevant experience. There are opportunities for promotion to higher grades with salary maxima beyond £10,000. It is the policy of the Council to fill all vacancies from internal candidates if possible.

Successful applicants will receive 4 weeks' annual leave initially, plus 10% public and privilege holidays; there is also a non-contributory pension scheme. The Council has recently moved from London to a new central office adjacent to Swindon Station. There will shortly be a restaurant and extensive recreational facilities on the new site.

Application forms are available from the addresses below and the closing date for completed applications is 11 September 1978. Interviews will be held in Swindon.

Science Research Council
P.O. Box 16, Swindon SN2 1ET
Telephone (0793) 26222, ext. 2178

Research Officer

Information and Retrieval

System in Energy Research

The Energy Panel of the Science Research Council (SRC) wishes to appoint a Research Officer with some knowledge of the field of energy research for twelve months, to undertake a pilot exercise of an information and retrieval system for research in the field of energy research.

The exercise is to be undertaken jointly with the Energy Panel of the SRC, UK Atomic Energy Authority, Harwell.

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MINISTRY OF DEFENCE
(ARMY)
QUEEN VICTORIA SCHOOL, DUNBLANE
PRINCIPAL TEACHER
OF PHYSICAL EDUCATION

A vacancy exists for a Principal Teacher of Physical Education at this independent boarding school for 250 boys of Scottish Service men of ages 9 to 18.
The School has traditionally regarded Rugby, Swimming and Athletics as its major sports. It has a combined Cadet Force and participates keenly in the Duke of Edinburgh's Award Scheme.
The closing date for completed applications is 29th September, 1978.
The successful candidate will be expected to take up post in January, 1979, or as soon as possible afterwards. In addition, the successful candidate would be offered a quarter (married or bachelor) in the School Estate for which rent would be charged. He or she would be expected to share Boarding School duties, for which an allowance (currently under review) of £879 p.a. is paid.
The emoluments for the post are otherwise in accordance with the Scottish Teachers' Salaries memorandum.
Applicants should be registered teachers with the GTC (Scotland), or qualified to be registered.
Application forms, including Job Description, are available on request from—
The Headmaster,
Queen Victoria School,
Dunblane,
Perthshire.

Live In London Rent Free

We are a large international hotel situated in the centre of London and are recruiting now for:

HOTEL CLERKS

As part of our Front Office team working throughout the scene in our Bill of Fare you will be fully trained to operate our computerized system.
You must have a good 'O' level education, some experience of clerical work and lots of commonsense.
Working a five-day, 35 hour week on a shift rota system you will have plenty of time off to enjoy London's West End. We can offer an excellent starting salary, smart uniform, weekly housekeeping and full accommodation in our comfortable self-contained flats.
This is your chance to start a new career for yourself with a large international company. For details and an application form please apply to Employment Officer, Strand Palace Hotel, Strand, London, W.C.2. Tel. 01-240 2725.



MASSEY UNIVERSITY

Palmerston North, New Zealand

LECTURERS IN COMPUTER SCIENCE

Applications are invited for the following appointments:
LECTURER IN DEPARTMENT OF COMPUTER SCIENCE
The Department of Computer Science is seeking a Lecturer to join its staff. The successful candidate will be responsible for teaching and supervising students in the Department of Computer Science. The candidate should have a PhD in Computer Science or a related field and have at least five years' experience in teaching and supervising students. The candidate should also have experience in research and publication. The salary for this position is \$25,000 p.a. plus superannuation. Applications should be sent to the Department of Computer Science, Massey University, Palmerston North, New Zealand. Closing date: 15th September 1978.

Applicants should have broad knowledge of computer systems, including hardware and software, and be able to teach and supervise students in these areas. The successful candidate will be expected to contribute to the development of the Department of Computer Science and to engage in research and publication. The salary for this position is \$25,000 p.a. plus superannuation. Applications should be sent to the Department of Computer Science, Massey University, Palmerston North, New Zealand. Closing date: 15th September 1978.

OVERSEAS TEACHING POSTS

HEAD OF AUDIO-VISUAL AIDS DEPARTMENT (OMAN)

Teaching Materials Production Specialist for Primary Teacher Training Institute, Muscat, opening October, 1978. Candidates should have a degree with PGCE and five years' experience in primary teacher training and audio-visual instruction. Salary: £4,801 to £5,730 p.a. plus 10 per cent. Inducement.
Benefits: Free furnished accommodation; overseas and children's allowances. Two-year KETL contract, renewable. 78 WT 5

SENIOR LECTURER IN PLANT GENETICS (SRI LANKA)

University of Sri Lanka, Jellia Campus. Candidates should hold a Ph.D., preferably in Plant Genetics, and have at least five years' teaching experience. Preferred age range 30 plus. Salary: £5,881 to £7,707 p.a.
Benefits: Personal allowance; free furnished accommodation and other benefits. Two-year Formula contract. 78 PU 102

LECTURERS IN ENGLISH (SINGAPORE)

Institute of Education, Singapore. Fifteen lectures to teach Certificate and Diploma of Education courses in the Department of English Studies.
Degree and TEFL qualification essential; postgraduate experience. Preferred age range 30 plus. Salary: £1,705 to £2,420 p.m. (role of exchange approximately \$4,300 equals £1).
Benefits: Housing allowance; displacement allowance; gratuity on completion of contract, Two or three year contract. 78 PO 141-155

THE BRITISH COUNCIL

NEW ZEALAND

Central Institute of Technology

Head of School of Occupational Therapy

The Council of the Central Institute of Technology invites applications for the position of Head of the School of Occupational Therapy.
The person appointed will assume responsibility for the academic direction of the diploma course in occupational therapy and a student body of close to 300. The Head of the school is expected to maintain a close and effective relationship with hospitals, community programmes and practicing therapists for the provision of clinical experience. Accordingly, applicants should hold a qualification which meets the registration requirements of the New Zealand Occupational Therapy Board (PO Box 5013, Wellington). He or she should have extensive experience and have held administrative responsibility. A higher qualification such as a teaching diploma would be advantageous.
The Head of Department position has a salary of NZ Dirs 17,074 per annum plus NZ Dirs 385 (General wage order). Assistance with travel and related removal expenses will be available to the appointee. For further information and application forms please write to—
The Chief Migration Officer,
New Zealand House,
Heymarket, London SW1Y 4TO.
You should quote reference Inm 2/323/5.

LECTOR IN ENGLISH (YUGOSLAVIA)

University of Pilsin. To teach English Language to students in the Department of English. Starting date October, 1978.
Candidates, man only (single or married without children), should have a degree in English or Modern Languages; TEFL qualification with phonetic component desirable.
Salary: 7,800 new Dinars per month (currently £1 equals NO 35) not convertible, plus £1,353 p.a. paid by the British Council in the U.K.
Benefits: Free accommodation. One-year contract, renewable. 78 WT 5

LECTOR IN ENGLISH FOR SPECIAL PURPOSES (YUGOSLAVIA)

University of Ljubljana. To teach Technical English to university students of science and technology. Degree and TEFL qualification essential; postgraduate qualification in linguistics desirable. Interest in, or experience of, materials production or ESP Subfield experience of TEFL overseas essential and recording experience an advantage. Preferred age 30-40.
Salary: 8,000 to 7,000 new Dinars per month net (present rate of exchange £1 equals NO 35), non-convertible plus annual subsidy of £1,353 paid by the British Council in the U.K.
Benefits: Free accommodation; employer's portion of superannuation (if applicable). One year contract, renewable. 77 RU 16

SENIOR LECTURER IN ENGLISH (MALAWI)

Department of English, University of Malawi, Zomba. To teach English to university students, especially those training to become teachers, and to supervise postgraduate students and the language laboratory. First degree in English or Modern Languages and M.A. in English Language or Applied Linguistics. Substantial experience of teaching English for secondary schools and ability to use linguistic laboratory essential. Experience in examinations work, CCTV and ESP desirable.
Salary: £5,681 to £7,707 plus 10 per cent Inducement.
Benefits: Personal and children's allowances; free furnished accommodation. Two-year KETL contract.
Return fares are paid. Local contracts are guaranteed by the British Council. Please write briefly stating qualifications and length of appropriate experience, quoting relevant reference number and title of post, for further details and application form to The British Council (Appointments), 65 Onslow Street, London W1Y 2AA. 77 TU 42

NORTH BRISBANE COLLEGE OF ADVANCED EDUCATION

PRINCIPAL LIBRARIAN

North Brisbane CAE is an autonomous multi-purpose institution offering undergraduate courses in business administration, industrial relations, social studies, education, arts and sciences, welfare and recreation, postgraduate courses in industrial relations, social studies and education. The College enrolls 1,000-2,000 students and operates on two campuses, 10 km apart, in the North Brisbane suburbs Kedron and Carlingford.
The headquarters of the Library are at Kedron but there is a substantial branch library at the Carlingford campus. The Library holdings include 42,000 print items, over 1,700 serials and growing stocks of audio-visual materials. An automated catalogue has been developed specifically for this Library and it is a Bureau of the CAENET computer network located at the College (HP3000 computer).
The College is interested in the concept of a Librarian/lecturer who can manage the resources of the Library and the Audio Visual Centre and be appropriately co-ordinated with the Faculty of Business and Public Administration. Applicants should possess a formal qualification in librarianship as well as a degree or higher qualification in an appropriate field. Experience with an automated catalogue and familiarity with audio-visual services will be regarded as an advantage.
The salary for this position is negotiable, but is likely to fall within the Senior Lecturer range \$20,356 to \$33,737 per annum. The Principal Librarian is responsible to the Director of the College.
For further information and application forms please contact: Personnel Officer, P.O. Box 117, Kedron, Qld. 4051. Australia; telephone (07) 87 7077.
Applications close Friday, October 27, 1978.

Overseas continued

OVERSEAS DEVELOPMENT
KNOW-HOW vital to developing countries

Primary Teacher Trainers

Kenya

PRIMARY METHODS: ENGLISH, READING AND WRITING SKILLS, SCIENCE AND MATHEMATICS

Lecturers are required to participate in the British Primary Teacher Training Programme in Kenya. Duties will involve initial and in-service Teacher Training, and a certain amount of involvement with curriculum development, directed to an improvement in the quality of Primary Education. Preferred age limit 53 but well qualified and experienced candidates up to 58 considered. Strong preference given to graduates with teacher training college experience, but candidates with non-graduate who have had considerable experience of primary or middle school teaching and of teacher training (whether in-service or pre-service), including close contact with a college of education, in the UK also considered.

For posts in Reading and Writing skills, Lecturers in Primary Methods who are able to teach Reading and Writing techniques to Primary Teacher trainees will be preferred. Lecturers recruited as English Specialists will be deployed in the teaching of Mathematics with experience of the professional training of teachers at this level will be paramount upon the needs of the Kenya Education Service at the time the school starts. Priority given to candidates who do not have children of Primary school age or to those who have children who can be sent to boarding school, as Kenyan children are not available. Appointment 30-36 months.
Salary in range £5,518-£8,158 per annum including allowance normally in-leave in range £1,922-£3,130 p.a. Gratuity 25% of basic salary.

Other benefits include free family passages, children's education allowance and purchase loan to £1,200 payable in certain circumstances. Superannuation rights may be safeguarded. Applicants should be citizens of the United Kingdom, and holding which post is being applied for and giving details of age, qualifications and experience to:



Appointments Officer,
MINISTRY OF OVERSEAS DEVELOPMENT,
Room 401, Eland House,
Strat Place, London SW1E 5JH.

HELPING NATIONS HELP THEMSELVES

NEW ZEALAND

UNIVERSITY OF WAIKATO

APPOINTMENTS IN MANAGEMENT STUDIES

Applications are invited for the following appointments:

LECTURER IN MANAGEMENT STUDIES
The Department of Management Studies is seeking a Lecturer to join its staff. The successful candidate will be responsible for teaching and supervising students in the Department of Management Studies. The candidate should have a PhD in Management Studies or a related field and have at least five years' experience in teaching and supervising students. The candidate should also have experience in research and publication. The salary for this position is \$25,000 p.a. plus superannuation. Applications should be sent to the Department of Management Studies, University of Waikato, Hamilton, New Zealand. Closing date: 15th September 1978.

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NEW ZEALAND

New Zealand Technical Correspondence
Institute

CIVIL ENGINEERING TUTOR

A vacancy exists for a Tutor of Civil Engineering and applications are invited from Civil Engineers who have a University Degree, are members of the Institution of Civil Engineers and have suitable industrial experience preferably in Traffic Engineering. Ability to write a wide range of Civil Engineering Courses is also necessary. Assistance with travel and related removal expenses will be available to the appointee.

Salaries will be paid in the following ranges:—

T2 NZ Dirs. 10,928 to 14,126 (plus NZ Dirs. 385)

T3 NZ Dirs. 13,229 to 15,401 (plus NZ Dirs. 385)

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Chief Migration Officer,
New Zealand House,
Heymarket,
London SW1Y 4TO.

You should quote reference Inm 2/323/5.

